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Self-Efficacy and Academic Achievement Among Pre-service Teachers in Malaysia

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Abstract: *The formation of self-efficacy (SE) is crucial for pre-service teachers (PSTs) in IPG since it promotes their ability to handle classroom challenges effectively, manage diverse potential students, and encourage learning participation in class. The formation of self-efficacy is also important to develop confidence among PSTs due to the future roles of educators in the education system. Thus, it is important to determine the contribution of gender and academic achievement towards Self-Efficacy formation among PSTs. Using the Teacher Self-Efficacy instrument with a sample of 208 respondents, the findings indicated that overall, SE was at a high level. However, no significant differences were found between male and female PSTs, nor was there a meaningful correlation between academic achievement and SE. Similarly, no significant differences were observed in academic achievement across genders. These results suggest that self-efficacy among PSTs in this context is largely independent of gender and academic background. Instead, SE may be shaped by other contributing factors beyond academic achievement alone. Therefore, while gender differences remain an important consideration in teacher education, the development of SE should also integrate other elements such as institutional support and curriculum design, and practicum experiences.*

Keywords: Academic Achievement; Pre-Service Teachers; Self-Efficacy; Teacher Training Institute

1. Introduction

Pre-Service Teachers (PSTs) today will be teachers in the future, forming the future generation to lead the country in a better direction. Therefore, academic achievement is a key indicator for evaluating the PSTs' educational progress, particularly whether they have achieved the standard of an effective teacher. On the other hand, most scholars agree that SE is a crucial non-intellectual component in improving academic performance (Basith et al., 2020; Meera & Jumana, 2015). The importance of SE also plays an important role in the education of PSTs by shaping their perceptions of their capability to plan, execute, and manage instructional strategies, influencing their persistence, classroom management, and effectiveness in fostering student learning. (Cai et al., 2022). However, while acknowledging the importance of self-efficacy (SE) in the success of pre-service teachers (PSTs), many scholars argue that academic achievement alone is not sufficient to support its formation. Vatou et al. (2025) emphasize the role of a supportive educational environment, particularly at the institutional level, while Dilekli and Tezci (2020) highlight the influence of cultural and gender-related factors that also contribute significantly to the development of SE. Education for PSTs starts with IPG, where

all the curricula are planned and centralized by the Ministry of Education (MoE), whereas in China, Canada, and Australia, the responsibility for managing PSTs' education program is managed by states and governments (Chee Choy et al., 2020; Yanmei et al., 2024). Centralized management gives advantages in the education process for PSTs in ensuring that the national philosophy of education can be applied in the learning and teaching process in IPG, also assessing the quality of PSTs' education, regardless of location, gender, or culture, resulting in equity and consistency in the education progress of PSTs.

The role of IPG is seen as important in shaping the SE of PSTs because there are studies that state the importance of the environment and experience inside and outside the education system among the factors that are related to SE and academic success (Hinduja et al., 2024). Another study related to the components of SE focused on cognitive factors, such as studies by Hayat et al. (2020) and Koyuncuoglu (2023), social class, or social support, studies by Chen et al. (2025) and Tan et al. (2023), and motivation studies by Celcima et al. (2024) and Li et al. (2023). Other factors that need to be considered in SE are gender differences (Heber Dumanjug et al., 2024; Wang & Yu, 2023), since it is related to the physiological and psychological needs between genders. According to Delbouh et al. (2025), teachers' professional performance and teaching experience are highly influenced by their gender position; thus, there has been significant interest in educational studies to uncover the gender differences and their effect on the educational field. Thus, this study explored the formation of self-efficacy from the perspectives of gender and academic achievement, while also recognizing the need to account for additional contributing factors beyond academic achievement alone.

2. Literature Review

Teacher self-efficacy refers specifically to educators' perception of their ability to effectively manage classrooms, engage students, and deliver effective instruction (Tschannen-Moran & Hoy, 2001). Realizing the importance of teacher self-efficacy, they developed three key constructs that influence a teacher’s self-efficacy beliefs, which are: 1) Efficacy for Student Engagement, 2) Efficacy for Instructional Strategies, and 3) Efficacy for Classroom Management. The factor of student engagement significantly enhances teachers' self-efficacy by promoting a sense of competence and confidence as engaged students provide feedback, enabling PSTs to reflect on their teaching method (Emiru & Gedefaw, 2024; Lugnasin & Espinosa, 2024). The instructional strategy components, on the other hand, can enhance teachers' self-efficacy, as they help PSTs develop the confidence and competence to deliver instruction with diverse learners in a classroom effectively (Asare & Amo, 2023; Ma et al., 2021). In addition, classroom management is a component that helps PSTs build confidence in creating structured and positive learning environments to foster academic success (Sciuchetti & Yssel, 2019; Slater & Main, 2020). These three components are crucial in developing the skills and confidence needed to create positive, productive learning environments for students. Consequently, SE can affect students’ achievements indirectly or directly. According to Jerrim et al. (2023), the teachers’ behaviors and practices towards the challenges in the classroom were indirectly driven by SE, while the role modelling attitude shown by teachers with higher SE directly affects the students in engaging in the learning process. Despite that, a few scholars have argued that not only SE in teachers has a positive effect on students’ achievements (Pekrun, 2021). Culture can also affect the level of SE in teachers since diversity of culture is an important element in the learning process for equal and inclusive education (Dahalan et al., 2023; Wawrosz & Jurásek, 2021). In addition, Choi & Lee (2020) state that the level of SE in accepting diversity in students makes the learning more meaningful and effective, as the teachers have more confidence in engaging students with various cultures and beliefs.

Malaysia's collectivist culture emphasizes values rather than individuality, such as social harmony, family influence, and adherence to traditional norms that play a significant role in shaping gender SE among PSTs (Ahmad et al., 2018; Azmi et al., 2023; Sumari et al., 2019). These collective values influence how both genders perceive their beliefs in teaching, making it essential to consider cultural context when evaluating and supporting SE development in Malaysian teacher education programs. Although the country of Malaysia has various cultures that differ according to the state, the centralized management system by the government can ensure that the national philosophy of education can be embedded as a core foundation in pre-service teacher education. The NPE uses the term as the holistic development of individuals, which can be defined as the principle that, regardless of gender, all individuals have rights and equal opportunities to develop their potential, resulting in an equal learning process for PSTs in education programs. Despite the importance of SE for PSTs' careers, research specifically focused on SE concerning gender is somewhat limited. Most of the studies in the teachers' context in Malaysia use in-service teachers as a sample for SE (Amatan & K Han, 2020; Gopal et al., 2024; Hasaidi & Thambu, 2018; Raja Yusof & Nik Yaacob, 2022). There are a few studies outside the Malaysian context that focus on the SE among PSTs, such as studies by (Delbouh et al., 2025b; Moraga-Pumarino, Salvo-Garrido, & Vesnia Ortiz-Cea, 2025; Muega-Geronimo & Carlos, 2023; Navarro et al., 2022), which indicate that there is a gender difference in SE among PSTs, resulting in the need to explore the differences in gender towards the PSTs' education system in Malaysia. Thus, the current studies are likely to discover the level of SE and the differences in gender among PSTs in Malaysia and discuss the factors related to the findings.

3. Methodology

This study used a quantitative method, specifically a survey questionnaire, to investigate SE toward academic achievement among PSTs in IPG. The study sample comprises 208 PSTs in year 4 in IPG 2024. According to Mumtaz et al. (2020), a minimum of 30 people can be used in most of the behavioral research, with 50 to 100 samples frequently needed for basic regression analysis. Thus, the number of 208 samples is considered adequate for this study. This study uses a simple random sampling method to ensure an unbiased representation of the population by guaranteeing every member has an equal chance of being selected, reducing the possibility of skewed results and allowing for reliable generalizations about the broader group. The method of collecting the data was using self-assessment with the researcher's administration of the items.

4. Results

The sample size consists of 208 individuals, with the majority being female, 61.1%, and male, 38.9%. The academic distribution was 56.3% first-class, 42.3% upper second-class, and 1.4% lower second-class. The IPG distribution reveals that 16.3% from IPG Kampus Kota Bharu, 14.9% IPG Kampus Tun Hussein Onn, 14.4% IPG Kampus Darul Aman,13.9% IPG Kampus Sultan Mizan, 13.5% IPG Kampus Pendidikan Teknik, 13.0% IPG Kampus Tunku Bainun, 12.0% IPG Kampus Perlis, and 1.9% IPG Kampus Rajang.

Table 1: Demographic Data of Respondents

Demographic Data		Count	Column N %
Gender	Male	81	38.9%
	Female	127	61.1%
Academic	First Class	117	56.3%
	Upper Second Class	88	42.3%
	Lower Second Class	3	1.4%
IPGK	IPGKPT	28	13.5%
	IPGKSM	29	13.9%
	IPGKTHO	31	14.9%
	IPGKKB	34	16.3%
	IPGKDA	30	14.4%
	IPGKTB	27	13.0%
	IPGKP	25	12.0%
	IPGKRajang	4	1.9%

4.1 What is the level of Self-Efficacy among PSTs in IPG?

Three categories, low, medium, and high, were used to determine the pre-service teacher's degree of SE based on the study (Tahsildar, 2019). PSTs with mean scores between 1 and 3 had low scores. PSTs with mean scores between 4 and 6 were medium, while those with mean scores between 7 and 9 had a high level of self-efficacy. The findings discovered that the participants had a mean self-efficacy score of 7.18, with a high sense of efficacy. This indicates that, on average, the participants reported a relatively high level of self-efficacy. However, the score is not at the very top of the scale, suggesting that while they generally perceive themselves as capable, their confidence is not at an extreme level.

Table 2: Level of Self-Efficacy

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Self-Efficacy	208	4	9	7.18	.958
Valid N (listwise)	208				

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Classroom Management	208	4	9	7.26	1.154
Instructional Strategies	208	4	9	7.14	1.059
Student Engagement	208	3	9	7.13	1.097
Valid N (listwise)	208				

4.2 What is the difference in Self-Efficacy between Genders among PSTs in IPG?

An independent sample T-test analysis was used to differentiate the mean score of Self-Efficacy between male and female students. The test shows that the value of $t(206) = 1.884$, $p = .061$, is not significant. Although male students ($M = 7.33$, $SD = 0.888$) reported slightly higher scores than female students ($M = 7.08$, $SD = 0.991$), this difference did not reach the conventional threshold for statistical significance ($p < .05$). In simpler words, gender did not affect the self-efficacy level among PSTs.

Table 3: Independent Sample T-Test analysis of self-efficacy based on gender

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Self-Efficacy	Male	81	7.33	.888	.099
	Female	127	7.08	.991	.088

Independent Samples Test											
		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
Self-Efficacy	Equal variances assumed	2.774	.097	1.884	206	.030	.061	.255	.135	-.012	.522
	Equal variances not assumed			1.931	183.901	.028	.055	.255	.132	-.006	.516

4.3 What is the difference in gender towards academic achievement among PSTs in IPG?

A two-way ANOVA test was conducted to see if there was a significant difference in academic achievement. This analysis also aims to see the effect of gender and academic achievement on teacher self-efficacy. Male and female students are divided into three types of achievement, namely first-class achievement, upper second-class achievement, and lower second-class achievement. The effects of gender F (2,202) = .034, p= .853, academic achievement F (2,202) = 1.240, p= .292 and interaction effects (2,202) = .242, p= .786 were not significant. The analysis revealed that both academic background and gender had small effects on self-efficacy scores. The partial eta squared value for academic background was 0.012, indicating that it accounted for approximately 1.2% of the variance in self-efficacy. In comparison, gender had an even smaller effect, with a partial eta squared of 0.002, explaining only 0.2% of the variance. These results suggest that neither academic background nor gender had a substantial impact on self-efficacy in this sample.

Table 4: The difference in academic achievement between genders

Descriptive Statistics				
Dependent Variable: TSES				
Gender	Academic	Mean	Std. Deviation	N
Male	First Class	7.4072	.81693	44
	Upper Second Class	7.2548	.99425	35
	Lower Second Class	7.0833	.47140	2
	Total	7.3333	.88819	81
Female	First Class	7.1941	.90747	73
	Upper Second Class	6.9119	1.09149	53
	Lower Second Class	7.4167	.	1
	Total	7.0781	.99124	127
Total	First Class	7.2742	.87709	117
	Upper Second Class	7.0483	1.06154	88
	Lower Second Class	7.1944	.38490	3
	Total	7.1775	.95840	208

Levene's Test of Equality of Error Variances[a,b]

		Levene Statistic	df1	df2	Sig.
TSES	Based on Mean	2.052	4	202	.088
	Based on Median	2.019	4	202	.093
	Based on Median and with adjusted df	2.019	4	196.318	.093
	Based on trimmed mean	2.045	4	202	.089

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
a. Dependent variable: TSES
*b. Design: Intercept + Gender + Academic + Gender * Academic*

Tests of Between-Subjects Effects
Dependent Variable: TSES

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	6.363[a]	5	1.273	1.399	.226	.033	6.994	.488
Intercept	1181.993	1	1181.993	1299.228	<.001	.865	1299.228	1.000
Gender	.031	1	.031	.034	.853	.000	.034	.054
Academic	2.257	2	1.128	1.240	.292	.012	2.480	.268
Gender * Academic	.439	2	.220	.242	.786	.002	.483	.088
Error	183.773	202	.910					
Total	10905.521	208						
Corrected Total	190.135	207						

a. R Squared = .033 (Adjusted R Squared = .010)
b. Computed using alpha = .05

4.4 What is the correlation between academic achievements and Self-Efficacy among PSTs in IPG?

A Pearson product-moment correlation was conducted to examine the relationship between academic achievement and self-efficacy. The results indicated that there was no significant relationship between the two variables, r (206) = .102, p = .143. This suggests that higher academic achievement was not associated with higher levels of self-efficacy among pre-service teachers. Thus, to enhance the SE among PSTs, a few factors need to be considered. Although the findings show negative results, indicating that higher academic achievement was associated with slightly lower self-efficacy scores, the relationship can be ignored due to the weak and not statistically significant relationship.

Table 5: Correlation between academic achievements and Self-Efficacy

Correlations

		Academic	SE
Academic	Pearson Correlation	1	-.102
	Sig. (2-tailed)		.143
	N	208	208
SE	Pearson Correlation	-.102	1
	Sig. (2-tailed)	.143	
	N	208	208

5. Conclusion

These findings reveal that PSTs exhibit high levels of SE, a critical predictor of their future classroom effectiveness. Below, we contextualize these results through two lenses: (1) institutional support and curriculum design, and (2) practicum experiences. The Institute of Teacher Education (IPG) plays an important role in shaping the quality and professionalism of future educators in Malaysia. Through a well-designed curriculum that integrates theory, practicum, and professional development, IPG ensures that PSTs are not only knowledgeable in their subject areas but also competent in applying effective teaching strategies (Syed Mustapa et al., 2024). In addition, the IPG also obtained regular feedback from school administrators within a year of being placed at the school and found that 99.33 percent of schools were satisfied with their performance in schools (Syed et al., 2022). Nonetheless, while theoretical models and syllabi provide foundational knowledge, they offer limited guidance on how to navigate the practical realities of classroom teaching. PSTs often face diverse challenges and issues that can hinder the effective delivery of education (Eğinli & Solhi, 2021; Yin, 2019). As a result, the elevated levels of SE observed in this study may be attributed to these broader experiential influences beyond formal instruction.

Among the other components to enhance the SE among PSTs to become effective teachers is to provide more space for practicum sessions for PSTs. Realizing the importance of practicum for PSTs, IPG has taken an initiative to increase the time spent on practicum to 40%, causing more time for them to integrate, apply, and gain information on how to handle pedagogy, instruction, and classroom management. This suggestion is supported by a study conducted by De Guise et al. (2024) and Manowaluilou & Reeve (2022), who stated that the practicum period is one of the important components that can help PSTs prepare and increase their level of SE. The PSTs in IPG were going through 3 phases of practicum sessions, with phase 1 being 4 weeks, phase 2 being 8 weeks, and phase 3 being in the final year, with 12 weeks (Ros Amisha Shabudin et al., 2017) In comparison with other countries, the time spent by PSTs in practicum sessions was six weeks, with at least two different schools for the UK, Japan was minimum 4 weeks in one schools and a whole year of final year with five sessions roughly 7 weeks for session in various schools for Finland (Shiobara, 2023; Sokka-Meaney & Haring, 2018). PSTs' self-efficacy developed because of the mastery experience they obtained during their practicum. This extended period allows them to experience various stages of the school calendar, manage classroom routines, and engage with students in meaningful ways.

The second discussion is about the difference in self-efficacy among genders toward academic achievements among PSTs in IPG. The findings of this research were supported by (Amatan et al., 2020; Maryam Norazan, 2023; Rosman Salubin et al., 2023; Syed Ali et al., 2014) in the Malaysian teachers' context, and yet, a study done by Keten (2022) and Agormedah et al. (2022) outside Malaysian contexts indicates that females were more effective in student engagement and classroom management than men. It indicates mixed results in confirming the difference in SE among genders. It may be due to several factors, since the finding shows no difference in gender towards self-efficacy among PSTs, such as equal opportunities in training. This focus on providing uniform opportunities for skill-building and competence development can lead to similar levels of SE between genders. Malaysia's collectivist culture plays a pivotal role in fostering equal positive beliefs among male and female PSTs. In collectivist societies like Malaysia, there is a strong emphasis on group harmony, cooperation, and mutual support, which creates inclusive educational environments where both genders are encouraged to participate equally. The factor that contributes to development in SE is not only based on academic factors but also beyond that, with the influence of culture, gender roles, and family

beliefs (Liberatore & Wagner, 2020; Moraga-Pumarino et al., 2025). Therefore, the related parties need to consider other elements not only academic achievements, but also factors mentioned above to enhance the SE among PSTs in IPG when reforming the curriculum in teacher training institutes.

Despite that, the effect of gender on SE among PSTs should not be underestimated, since a few studies show the difference in SE among male and female teachers (Abidin et al., 2019; Agormedah et al., 2022), where the change in the educational landscape leads to more challenging education in the future. According to Ikhlas & Rosa (2023), there is a difference in technological self-efficacy among genders, with males exhibiting higher SE than women. This may be due to how males perceive technological advancement compared to women, or gender roles factors that assume that women are less capable of using technology (Sobieraj & Krämer, 2020).

While this study highlights the importance of IPG towards the development of SE, a few limitations need to be considered to generalize this finding towards the PSTs context in Malaysia. This study focused on PSTs in the IPG context, while in teachers' education in Malaysia, two entities produce future teachers, which are IPG and IPTA. The IPG system was to produce future teachers in primary schools and IPTA for secondary schools. Since culture and the role of the institution are among the factors that contribute to SE among PSTs, it is important to expand this research on the IPTA context because of the different systems and assessment of the institution. In addition, the culture of PSTs in IPG and IPTA was different since it focuses on a different curriculum, which is for primary or secondary schools.

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Conflict of interest
No potential conflict of interest was reported by the authors.

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