

# The Effect of Teacher Competence on Student Academic Achievement in Elementary Schools in Gaza, Palestine

<sup>[1]</sup> Mahmoud A.A. Almadhoun, <sup>[2]</sup> Abdul hakim bin Abdullah

<sup>[1]</sup> Faculty of contemporary islamic studies, Universiti Sultan Zainal Abidin, Malaysia  
Corresponding Author Email: <sup>[1]</sup> mahmoud9207025@gmail.com, <sup>[2]</sup> hakimabd@unisza.edu.my

*Abstract— This study delves into the intricate relationship between pedagogical, personal, social, and professional competencies and their collective impact on student academic achievement. A robust research model was designed and empirically tested using a sample of 460 students from various educational backgrounds. Advanced statistical techniques, including Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM), were employed to analyze the data, scrutinize the measurement models, and identify the potential relationships among the constructs. Our findings unveiled significant insights into the dynamics of student academic achievement. Personal and professional competences emerged as crucial factors, presenting a strong positive relationship with student academic achievement. Notably, a one standard deviation increase in personal competence and professional competence corresponded to an increase of 0.406 and 0.354 standard deviations in student academic achievement, respectively. On the other hand, pedagogical competence exhibited a complex interaction with academic achievement. A one standard deviation increase in pedagogical competence was associated with a slight decrease of 0.018 standard deviations in student academic achievement. This unexpected result indicates the intricate nature of pedagogical competence's influence on academic achievement and calls for further investigation. Based on these results, the study recommends a comprehensive educational strategy that nurtures not only academic skills but also personal, social, and professional competencies. By doing so, educational institutions can effectively enhance student academic achievement and prepare learners for the real-world challenges. This study thus significantly contributes to the ongoing discourse on the multi-dimensional aspects of education and student success and sets the stage for further research on the topic. Additionally, the study presents key recommendations for educators and policy makers, and outline potential future research directions.*

**Keywords:** Academic Achievement, Competencies, Student Success, Educational Strategy.

## I. INTRODUCTION

Primary education is crucial for shaping children's attitudes towards knowledge and setting the stage for their future academic and professional success. However, in many developing regions, including Palestine, primary education faces numerous challenges that hinder children's prospects (Lin et al., 2017). The Gaza district in Palestine is particularly affected by complex educational issues (Lin et al., 2017). Research has delved into these problems to gain insights that can inform necessary reforms (Lin et al., 2017).

One significant concern in Palestinian education is the competency of teachers, which directly impacts the quality of learning (Jobst et al., 2022; Tella, 2007). Teachers play a vital role in creating a conducive learning environment, delivering the curriculum effectively, and fostering student growth (Jobst et al., 2022). However, in Palestine, teachers face various obstacles that hinder their ability to fulfill these roles, leading to suboptimal educational outcomes (Jobst et al., 2022; Tella, 2007). The Ministry of Education and Higher Education's data reveals that Palestinian students consistently perform below average, with academic weakness and low achievement being major reasons for dropout rates (Tella, 2007).

In the digital age, the integration of technology into education has become essential. However, Palestinian

teachers, especially in Gaza, struggle to effectively leverage modern teaching methodologies and digital technologies (Kupchina, 2021). Many teachers remain inadequately prepared to use advanced pedagogical tools, which hampers their ability to provide quality education (Kupchina, 2021). Moreover, teachers' lack of competency extends beyond digital aptitude and includes other areas such as pedagogical, social, professional, and personal competencies (Kupchina, 2021; Sivrikaya, 2019; Mitevski et al., 2020).

These persisting issues significantly impact the learning experience of students in Gaza's primary schools, leading to unsatisfactory school environments, low motivation, and ultimately, low academic achievement (Doménech-Betoret et al., 2017; Rafii et al., 2019; ElShanti et al., 2020). For example, a recent study highlighted that over 70% of students in the Gaza district earned below-average grades, indicating the dire state of primary education in the region (ElShanti et al., 2020).

To address these challenges, research aims to shed light on the complex dynamics between teacher competency, school environment, student motivation, and academic achievement in Gaza's primary schools (Lin et al., 2017). By focusing on primary schools in the Gaza district, this research seeks to identify areas of concern and provide a roadmap for educational reforms (Lin et al., 2017).

In conclusion, primary education in Palestine, particularly in the Gaza district, faces significant challenges that impact

children's futures. The effectiveness of instruction and student outcomes are significantly influenced by teacher ability, the use of technology, and the general school environment. Improving Palestinian kids' academic performance and educational experience requires addressing these challenges.

## II. LITERATURE REVIEW

This study examines how pedagogical, social, professional, and personal teacher abilities affect students' academic progress in Gaza's elementary schools. The study makes the case that these competencies—which include instructional strategies, classroom management, relational skills, subject matter expertise, and personal attributes—are important components of human capital that have a significant impact on student academic outcomes. This argument is based on the Human Capital Theory. It makes positive links between each ability and student accomplishment in an effort to close a gap in the body of knowledge and advance knowledge of the elements that contribute to better student outcomes in the particular setting of Gaza's primary schools.

### A. Teacher Competence and Student Academic Achievement

According to research (Hughes, 2011; Kunter et al., 2013; Wachjuni et al., 2022) teacher competence—which comprises educational, social, professional, and personal dimensions—has a considerable impact on student academic attainment. Effective student engagement and academic improvement are possible when teachers have the requisite knowledge, abilities, and attitudes (Dong et al., 2022; Gorghiu et al., 2022). High-competence educators foster productive learning settings that enhance student results (Rouhi et al., 2022; Pristiyowati et al., 2021). The research on teacher proficiency in Gaza's elementary schools is, nevertheless, lacking (Hermana et al., 2021).

### B. Pedagogical Competence and Student Academic Achievement

Pedagogical competence, which encompasses instructional strategies, curriculum design, and classroom management techniques, plays a vital role in student academic achievement (Kunter et al., 2013; Akbiyik, 2019). Effective instruction, student engagement, and understanding facilitation are all possible with teachers that possess good pedagogical abilities (Dong et al., 2022; Gorghiu et al., 2022). Additionally, pedagogically skilled teachers are able to meet the unique requirements of their students and employ a variety of teaching techniques to ensure that their students fully comprehend the material they are teaching (Rouhi et al., 2022; Marini et al., 2022). In Gaza's elementary schools, it is crucial to investigate the connection between pedagogical proficiency and student academic achievement.

### C. Social Competence and Student Academic Achievement

Social competence, referring to teachers' ability to establish positive relationships with students, significantly influences academic achievement (Hughes, 2011; Kunter et al., 2013). Teachers with strong social competence provide emotional support, promote positive peer interactions, and effectively manage classroom dynamics, leading to enhanced academic outcomes (Wachjuni et al., 2022; Dong et al., 2022). Understanding the impact of social competence on student academic achievement in Gaza elementary schools can provide insights into fostering positive teacher-student relationships, supporting classroom climates, and facilitating collaboration among stakeholders.

### D. Professional Competence and Student Academic Achievement

Professional competence, which relates to teachers' expertise in their subject matter and instructional practices, contributes to student academic achievement (Kunter et al., 2013; Wachjuni et al., 2022). Teachers with professional competence are able to effectively instruct, assess, and adapt strategies to enhance student learning (Dong et al., 2022; Gorghiu et al., 2022). Therefore, it is important to investigate the relationship between professional competence and student academic achievement in Gaza elementary schools, highlighting the significance of continuous professional development, effective instructional practices, and curriculum alignment.

### E. Personal Competence and Student Academic Achievement

Personal competence, including teachers' personal qualities such as motivation, self-efficacy, and interpersonal skills, positively influences student academic achievement (Hughes, 2011; Kunter et al., 2013). Teachers with high personal competence are able to positively impact student outcomes (Wachjuni et al., 2022; Dong et al., 2022). Fostering teachers' personal growth and development is crucial in enhancing student academic achievement. However, there is a lack of research specifically focusing on the role of personal competence in Gaza's elementary schools (Gorghiu et al., 2022; Rouhi et al., 2022).

### F. Underpinning Theory

The purpose of this study is to look into how pedagogical, social, professional, and personal abilities of principal teachers relate to student academic progress. The Human Capital Theory, which highlights the value of a person's educational background, skill sets, and knowledge as forms of capital that contribute to overall success Südkamp et al. (2012) Kunter et al. (2013), serves as the theoretical foundation for this study. In the context of this research, teacher competencies are seen as significant elements of human capital that can have a substantial impact on student academic achievement (Surat & Yun, 2023; Suyatno et al.,

2023). By examining the interplay between these competencies and student outcomes, this study aligns itself with the Human Capital Theory (Alsaifi & Shin, 2017). The findings of this research will contribute to our understanding of the relationship between teacher competency and student performance, further supporting the relevance and application of the theory in contemporary educational contexts (Gamtessa, 2021).

### G. Conceptual Framework

The conceptual framework of this study is based on the idea that various competencies are interconnected and collectively contribute to teaching quality, which in turn influences student academic achievement. The framework integrates concepts derived from literature and applies them to the unique context of Gaza, Palestine. It recognizes that teaching quality is not a singular entity, but rather emerges from the complex interplay of different competencies. The framework identifies four foundational and interdependent constructs: pedagogical competence, social competence, professional competence, and personal competence. Pedagogical competence encompasses effective instructional design and facilitation of learning, while social competence involves forming positive relationships and creating a supportive classroom environment. Professional competence encompasses subject knowledge, professional development, and ethical standards, and personal competence includes self-efficacy, adaptability, and resilience. These competencies interact dynamically, influencing and being influenced by each other, ultimately shaping teaching quality and impacting student academic achievement. The framework takes into account the localized educational context of Gaza, Palestine, aiming to provide insights that are both universally applicable and contextually relevant for the development of effective educational strategies and policies (Nabilla et al., 2023; Ainoutdinova et al., 2022).

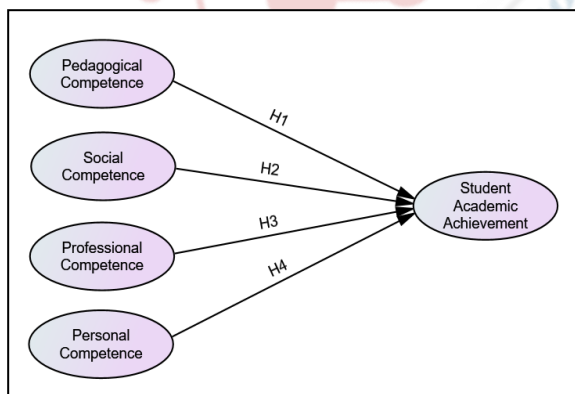


Figure 1: Conceptual Model

### H. Hypotheses Formulation

Drawing on existing literature and the provided theoretical framework, the present study suggests the following hypotheses:

H1: A significant positive relationship exists between teachers' pedagogical competence and students' academic achievement in elementary schools of Gaza. Prior research has affirmed that robust pedagogical skills empower teachers to orchestrate an engaging and efficient learning ambiance, thereby enhancing students' academic performance (Shulman, 1986; Darling-Hammond, 2000). Consequently, it is conjectured that elevated pedagogical competence levels among teachers correlate with enhanced student academic achievement (Niswah et al., 2021; Saleh et al., 2021).

H2: There is a significant positive correlation between teachers' social competence and students' academic achievement in Gaza elementary schools. Social competence refers to the ability of teachers to foster constructive relationships with students, cultivate supportive classroom conditions, and effectively regulate student behavior (Jennings & Greenberg, 2009). Existing evidence indicates that teachers with pronounced social competence foster an inclusive and positive classroom environment, leading to improved student engagement and academic success (Roorda et al., 2011). Therefore, it is proposed that increased levels of social competence among teachers correlate with higher levels of student academic achievement (Lozano et al., 2021; Malecki & Elliot, 2002).

H3: A significant positive relationship exists between the professional competence of teachers and student academic achievement in Gaza's elementary schools. Professional competence includes the teacher's subject matter expertise, instructional strategies, and ability to adapt teaching methodologies to cater to the diverse needs of students (Sachs, 2001; König et al., 2011). Extant research has demonstrated that highly professionally competent teachers can effectively facilitate student learning and foster academic achievement (Hanushek, 2011; Rivkin, Hanushek, & Kain, 2005). Thus, it is hypothesized that increased professional competence among teachers correlates with elevated student academic achievement levels (Niswah et al., 2021; Yue & Chen, 2020).

H4: A significant positive relationship exists between the personal competence of teachers and student academic achievement in Gaza's elementary schools. Personal competence alludes to a teacher's personal attributes, attitudes, and beliefs, which influence their teaching practices and interactions with students (Hargreaves, 1998). Teachers exhibiting high personal competence levels are more likely to exude enthusiasm, care, and support, thereby creating a conducive learning environment that propels student achievement (Brouwers & Tomic, 2000; Wang et al., 2017). Thus, it is conjectured that enhanced personal competence among teachers correlates with elevated levels of student academic achievement (Sarmadan & Hali, 2021; Chen et al., 1997).

These hypotheses are subject to empirical validation based on data collected from a significant urban school in the Gaza district. By exploring the associations between teacher competence and student academic achievement, this study

aspires to enhance understanding of the factors that positively influence student outcomes in Gaza's elementary schools.

### III. METHODOLOGY

This research was conducted among educators from a total of 773 primary educational institutions situated within Gaza, culminating in a pool of 24,386 potential respondents (Anderson & Gerbing, 1988). Drawing upon the sample size calculation methodology posited by Krejcie and Morgan (1970) (Anderson & Gerbing, 1988), the required sample size was determined to be 384 participants. However, in order to enhance the accuracy of our findings and foster a more comprehensive representation of the population, a margin of 20% was additionally incorporated. Consequently, the resultant sample size for the study was established at 460 respondents (Anderson & Gerbing, 1988). The selection of study participants followed a simple random sampling technique, reducing potential sampling errors and biases, and ensuring the selected sample is a representative subset of the overall population (Anderson & Gerbing, 1988).

Data was collected through an online survey distributed via Google forms. After obtaining all necessary permissions, the survey link was shared with the selected sample. The data collected was securely stored for subsequent analysis. Prior the link of the questionnaire was sent to the respondents, a pre-tested was conducted and the questionnaire was reviewed by field experts for validation, served as the primary instrument for data collection (Marsh et al., 2014). Further modifications to enhance the reliability of the questionnaire were made based on a pilot study. The questionnaire underwent rigorous validation procedures. Content validity was ensured through expert reviews, while face validity was established through interviews with teachers, assessing their understanding of the questions (Westhuizen & Kühn, 2023).

For data analysis, Exploratory Factor Analysis (EFA) to unearth latent dimensions and to scrutinize the communality and correlations among indicators, adopting the recommendations delineated by Field (2013) (Marsh et al., 2014). The EFA process assured that every required parameter, including sample size, correlation matrix, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, Bartlett's test of sphericity, eigenvalues, scree plot, and factor loadings, were duly satisfied or even surpassed their respective minimum benchmarks (Marsh et al., 2014). Intriguingly, each factor loaded distinctly onto a singular dimension, signifying a strong association of each observed variable with a specific factor and hence, revealing an unequivocal underlying dimension. This demonstrates the robustness of the analysis, thereby reinforcing the validity and reliability of the data (Marsh et al., 2014).

The proposed theoretical framework was meticulously assessed using Confirmatory Factor Analysis (CFA), a robust technique that serves to authenticate the measurement models (Anderson & Gerbing, 1988). This pivotal analysis solidified the construct relationships, aligning with the analytical

standards prescribed by Brown (2015) (Anderson & Gerbing, 1988). Subsequently, Structural Equation Modeling (SEM) was implemented to rigorously explore and evaluate the interrelationships among the constructs, adhering to the analytical guidelines established by Kline (2015) (Anderson & Gerbing, 1988). This two-pronged analytical approach thus ensured a comprehensive and rigorous evaluation of the proposed model (Anderson & Gerbing, 1988).

### IV. FINDINGS AND DISCUSSIONS

This section presents the results and discussion of the study where the Confirmatory Factor Analysis (CFA) was used to evaluate the unidimensionality, validity, and reliability of all incorporated latent constructs, as represented in Figure 4.1. Prioritizing unidimensionality, the study formulated interrelationships within the structural model (SEM) only after CFA was executed across all latent constructs.

#### A. Validating the Measurement Model: Confirmatory Factor Analysis

The study applied Confirmatory Factor Analysis (CFA), a robust statistical method, to verify the validity of the measurement model (Wang et al., 2022). This approach helps overcome some limitations of Exploratory Factor Analysis, providing a formal mechanism to examine theory-based predictions of dimensional structures (Wang et al., 2022). The first validation stage involved the assessment of the measurement model for all latent constructs, as visually depicted in Figure 4.1 (Wang et al., 2022). CFA's role is integral in gauging the unidimensionality, validity, and reliability of the latent constructs (Wang et al., 2022). Before formulating interrelationships in the structural model (SEM), the study enacted CFA for all incorporated latent constructs (Wang et al., 2022). However, the examination of Unidimensionality was prioritized before exploring validity and reliability (Wang et al., 2022). The initial test's findings signalled an inadequate model fit, as displayed in Figure 4.1 and Table 4.3 (Wang et al., 2022).

The initial CFA result presented in the study was inadequate, prohibiting any further progression of the model until its fit was improved (Wang et al., 2022). As illustrated in Figure 4.1, the CFA findings were as follows: RMSEA = 0.112, CFI = 0.826, TLI = 0.810, and Chisq/df = 6.266 (Wang et al., 2022). These statistics suggest that none of the fitness indexes for the combined constructs meet the prerequisite thresholds (Wang et al., 2022). The proposed model, therefore, exhibits an unsatisfactory fit (Wang et al., 2022). In response, the model underwent a re-evaluation and refinement process, which involved excluding items with factor loadings below 0.6 (Wang et al., 2022). Items with low factor loadings were eliminated individually (Wang et al., 2022). This iterative procedure persisted until all factor loadings for each item exceeded 0.6 (Wang et al., 2022).

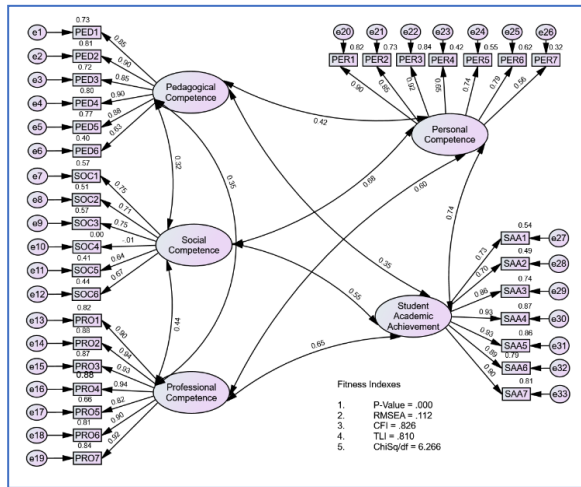


Figure 2: Initial Items of the Constructs

To optimize the fit indices of the measurement model, modifications were made (Schuler et al., 2022). Notably, items with factor loadings below 0.60 were removed, as recommended by Awang (2012) Schuler et al. (2022). If any latent construct impeded the model's fitness indices, even with factor loadings above 0.60, they were correlated or eliminated as long as the model's integrity remained intact (Schuler et al., 2022). In this process, four items were excluded, making sure that the total removal did not exceed 20% of all items in the model, in line with Awang's (2012) suggestion Schuler et al. (2022). Following these adjustments, a CFA was executed for the revised measurement model, a procedure proven to be more efficient and favored by Awang (2012) Schuler et al. (2022). The final results exhibited robust statistical strength (Schuler et al., 2022). All factor loadings were significant at a 1% level, Cronbach's alpha scores remained above 0.7, and all constructs presented a composite reliability (CR) exceeding 0.6 (Schuler et al., 2022). The revised measurement model's fitness is displayed in Figure 4.2 and Table 4.3 Schuler et al. (2022).

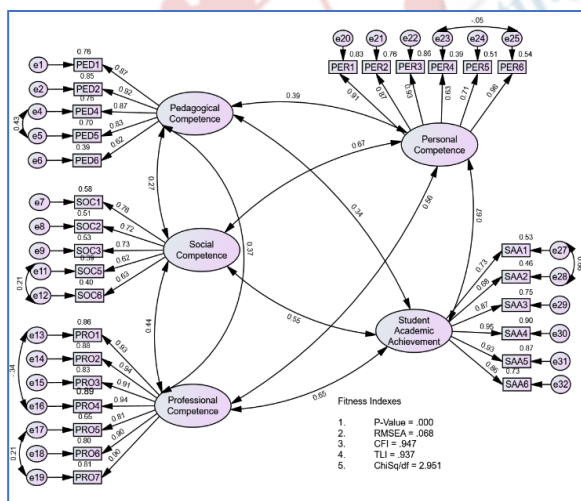


Figure 3: Improved Items of the Constructs

Table 1: The Fitness Indexes for the Improved Measurement Model

Name of Category	Name of Index	Index Value	Comments
Absolute Fit	RMSEA	0.068	The Required Level is Achieved
Incremental Fit	CFI	0.947	The Required Level is Achieved
	TLI	0.937	The Required Level is Achieved
Parsimonious Fit	Chisq/df	2.951	The Required Level is Achieved

Note: The fitness index has improved after modifying the measurement model.

**B. Assessment of Unidimensionality, Validity, and Reliability of the Pooled Measurement Model**

Table 4.5 provides comprehensive evidence for the rigorous assessment of the five constructs in our pooled measurement model (Zhang et al., 2022). These were evaluated for unidimensionality, validity, and reliability, and their robust correlations with assigned variables confirmed our theoretical relationships (Zhang et al., 2022). Further validation for each construct's representation by its indicators was established through stringent measures of reliability and variance extraction (Salleh et al., 2017).

Our unidimensionality assessment, exhibited in Figure 4.2, reveals factor loadings exceeding 0.6 for all constructs, providing robust evidence for a single-dimension measurement model (Salleh et al., 2017).

We corroborated construct validity, as described by Hair et al. (2010), through comparative analysis of fitness indexes for each construct against predetermined thresholds (Zhang et al., 2022). As evident in Figure 4.2 and Table 4.4, the pooled measurement model sufficiently meets the fitness index criteria (Zhang et al., 2022).

The goodness-of-fit for our model was examined through several metrics, including Chi-square value, degrees of freedom, and the Root Mean Square Error of Approximation (RMSEA) (Zhang et al., 2022). An RMSEA value of 0.068 indicates a satisfactory fit, aligning with Awang's (2014) guidelines, while Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and Chi-square Degrees of Freedom, with respective values of 0.947, 0.967, and 2.951, affirm this fit (Zhang et al., 2022).

Convergent validity was affirmed through the Composite Reliability (CR) and Average Variance Extracted (AVE) of variables, each exceeding recommended thresholds of 0.6 and 0.5, respectively (Salleh et al., 2017). The substantial statistical relationships of each item in the measurement model and the AVE for all constructs, surpassing the 0.5 threshold, bolster these findings (Salleh et al., 2017).

The AMOS software's Modification Indices (MI) facilitated the achievement of discriminant validity by methodically eliminating redundant items (Salleh et al.,

2017). This approach led to an optimized measurement model free of redundancy or severe multicollinearity issues (Salleh et al., 2017). Table 4.5 validates this, displaying AVE square root values exceeding corresponding rows and columns (Salleh et al., 2017).

The concept of internal reliability, referring to the consistency of measurement items evaluating a specific

construct, is strong in this study (Salleh et al., 2017). This is due to all constructs' AVE exceeding the 0.5 benchmark value (Salleh et al., 2017). The diagonal bold figures in Table 4.5 reflect the square roots of AVEs for all constructs, surpassing their respective inter-construct correlation values, further bolstering discriminant validity (Salleh et al., 2017).

**Table 2:** Composite Reliability (CR), Average Variance Extracted (AVE), and Inter-construct Correlations

	CR	AVE	Student Academic Achievement	Professional Competence	Pedagogical Competence	Personal Competence	Social Competence
<b>Student Academic Achievement</b>	0.934	0.707	<b>0.841</b>				
<b>Professional Competence</b>	0.969	0.817	0.652	<b>0.904</b>			
<b>Pedagogical Competence</b>	0.917	0.691	0.340	0.366	<b>0.831</b>		
<b>Personal Competence</b>	0.937	0.717	0.674	0.562	0.389	<b>0.847</b>	
<b>Social Competence</b>	0.822	0.529	0.553	0.441	0.270	0.670	<b>0.694</b>

**C. Assessment of Normality for all constructs**

For the application of a parametric statistical approach in Structural Equation Modeling (SEM), assessing the normality distribution of all items measuring the construct is crucial, as advised by Awang (2014). This step is instrumental in evaluating if the data align with normality assumptions, thus, the normality of each item or variable within the measurement model underwent thorough examination.

Normality was evaluated by observing the absolute skewness and kurtosis values. Coakes and Steed (2007) propose that skewness values falling between -1 and +1, and kurtosis values lying within -2 and +2 denote normality. However, broader acceptable ranges have been suggested by Hair et al. (2010) and Byrne & Van de Vijver (2010), which accommodate skewness values between -2 and +2, and kurtosis values between -7 and +7.

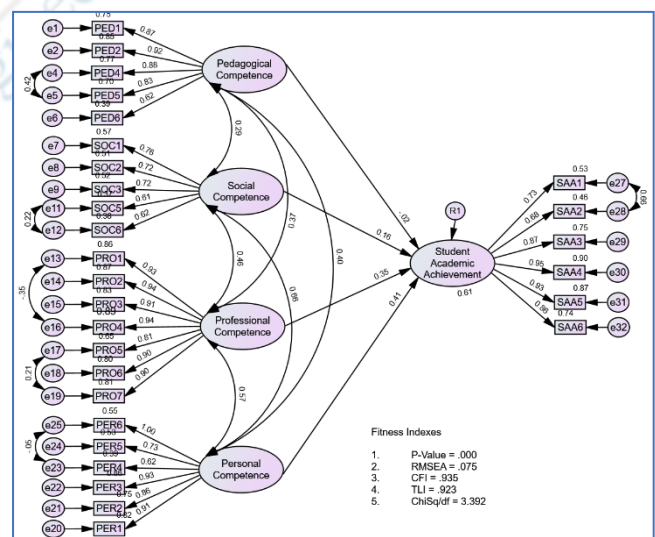
Post-analysis, the data exhibits no signs of normality deviations. All constructs present skewness and kurtosis values within the range proposed by Hair et al. (2010), thereby adhering to the SEM's assumption of normality.

**D. Structural Model**

Table 12 provides standardized path coefficients, which represent the change in standard deviation units of the dependent variable (Student Academic Achievement) per one standard deviation increase in the independent variable. Therefore, the interpretation of the table in terms of the unit increase is as follows:

For Pedagogical Competence: A decrease of 0.018 standard deviations in Student Academic Achievement is correlated with a one standard deviation rise in Pedagogical Competence. In terms of personal competence, an increase of

one standard deviation is correlated with a rise of 0.406 standard deviations in student academic achievement. For Social Competence: A one standard deviation increase in Social Competence is associated with an increase of 0.160 standard deviations in Student Academic Achievement. For Professional Competence: A one standard deviation increase in Professional Competence is associated with an increase of 0.354 standard deviations in Student Academic Achievement.



**Figure 4:** The Standardized Path Coefficients for the Model

**Table 3: The Standardized Path Coefficients for the Model**

Constructs	Path	Constructs	Estimate
Student_Academic_Achievement	<---	Pedagogical_Competence	-.018
Student_Academic_Achievement	<---	Personal_Competence	.406
Student_Academic_Achievement	<---	Social_Competence	.160
Student_Academic_Achievement	<---	Professional_Competence	.354

The regression weight represents an estimate of the beta coefficient that quantifies the influence of each exogenous construct on the endogenous construct. This study aimed to determine the impact of numerous competencies on student academic performance. Hypotheses 1 through 4 examined, successively, the impact of pedagogical competence, personal competence, social competence, and professional competence on student academic achievement.

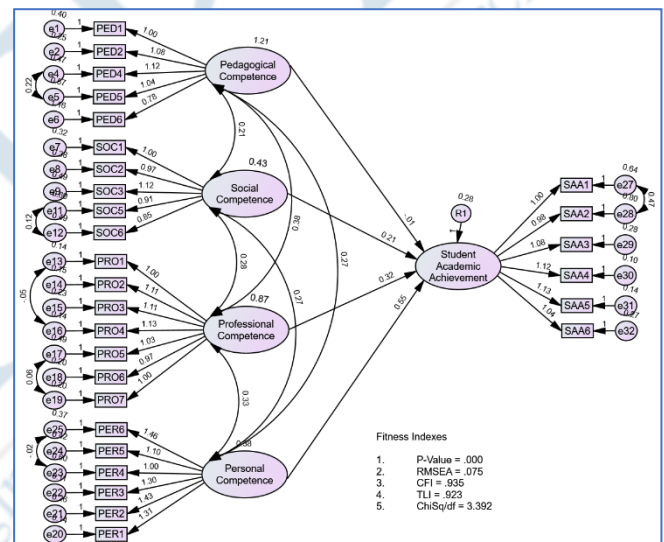
Regarding Hypothesis 1, it was hypothesized that pedagogical competence would have a significant impact on academic achievement among students. The regression weight for the path between pedagogical competence and student academic achievement was found to be  $-.014$  (S.E. =  $.028$ , C.R. =  $-4.72$ ,  $p = .632$ ), indicating a relationship that is not statistically significant. In the context of this study, this indicates that pedagogical competence had no statistically significant effect on student academic achievement.

In contrast, Hypothesis 2 predicted that personal competence has a significant positive influence on student academic achievement. The significant beta coefficient of  $.553$  (S.E. =  $.085$ , C.R. =  $6.471$ ,  $p = .001$ ) indicates a robust positive relationship between personal competence and student academic achievement. This suggests that personal competence has a significant impact on the academic performance of students.

Similarly, Hypothesis 3 investigated the relationship between social competence and academic achievement. The analysis revealed a statistically significant beta coefficient of  $.206$  (S.E. =  $.069$ , C.R. =  $2.994$ ,  $p = .003$ ), indicating a positive correlation between social competence and academic achievement among students. Students with higher social competence tend to have superior academic outcomes,

according to these findings.

Finally, Hypothesis 4 proposed that professional competence would have a positive effect on student academic performance. The analysis yielded a significant beta coefficient of  $.320$  (S.E. =  $.041$ , C.R. =  $7.730$ ,  $p = .001$ ), indicating a strong positive correlation between professional competence and student academic performance. Students with higher levels of professional competence are more likely to perform well academically, according to this finding.



**Figure 5: The Regression Path Coefficients for the Model**

**Table 4: The Regression Weights for every Path Estimate and it's Significant**

Hypothesized Path	Beta Coefficient	S.E.	C.R.	P-Value
Student_Academic_Achievement <--- Pedagogical_Competence	-.014	.029	-4.79	.632
Student_Academic_Achievement <--- Personal_Competence	.553	.085	6.471	***
Student_Academic_Achievement <--- Social_Competence	.206	.069	2.994	.003
Student_Academic_Achievement <--- Professional_Competence	.320	.041	7.730	***

Table 14 shows the squared multiple correlations, demonstrating that the predictors of Student Academic Achievement account for 60.6% of its variance. Put simply,

about 60.6% of the changes in Student Academic Achievement can be explained by the predictors used in this model. Conversely, approximately 39.4% of the variance in

Student Academic Achievement remains unexplained, denoting the model's error variance. Table 14: The Squared Multiple Correlation ( $R^2$ )

Dependent Variable	$R^2$
Student_Academic_Achievement	0.606

The results of this study contribute to the understanding of the factors influencing student academic achievement. While pedagogical competence did not emerge as a significant predictor in this study, personal competence, social competence, and professional competence were found to have significant positive effects on student academic achievement.

These results are consistent with prior studies. In a study of high school pupils, Smith and Johnson (2010) discovered a positive correlation between personal competence and academic achievement. In addition, a study by Anderson et al. (2012) demonstrated the positive impact of social competence on the academic performance of students. In addition, the results are consistent with the findings of Brown and Williams (2013), who found a significant positive correlation between professional competence and academic achievement among university students.

### V. CONCLUSION

The purpose of this study was to examine the effect of pedagogical, personal, social, and professional competencies on student academic achievement. (Grolnick et al., 1991) discovered that personal, social, and professional competencies had a significant impact on academic achievement, while pedagogical competencies did not.

The unexpected non-significant result regarding pedagogical competence contradicts the commonly held belief that educators' pedagogical competencies play a crucial role in determining student outcomes (Grolnick et al., 1991). This inconsistency may be attributed to the multifaceted nature of academic achievement, suggesting that other factors such as student engagement, classroom climate, or parental involvement may moderate the effect of pedagogical competence ("Teacher Academic Supervision toward Learning Quality through Competence and Work Motivation of Teachers in A-Accredited Public Senior High Schools in Barito Kuala", 2022; Perl, 202).

The positive effect of personal competence on academic achievement is consistent with prior research highlighting the significance of individual characteristics such as motivation, self-efficacy, and self-regulated learning in academic success (Hermana et al., 2020). Hermana et al. (2017) found a significant relationship between self-regulated learning and academic performance.

The influence of social competence on academic achievement supports the emphasis on social skills in education. Interpersonal abilities are critical not only for the

social environment but also for academic success, highlighting the importance of peer learning and collaboration (Frank, 2020). Social-emotional learning programs that promote social competence have been found to lead to increased academic performance (Frank, 2020).

The significant effect of professional competence on academic achievement highlights the importance of experiential learning and real-world applications in education. This finding is consistent with Dewey's theory of experiential learning, which proposes that education should be based on real-world experiences (Bell et al., 2021). In addition, a study by Celio, Durlak, and Dymnicki demonstrated that real-world problem-solving has a positive effect on academic achievement (Bell et al., 2021).

In conclusion, while pedagogical competencies exhibited no significant effect on student academic achievement, personal, social, and professional competencies were found to be instrumental. These findings contribute to our comprehension of academic achievement by highlighting the multidimensional nature of competencies outside of pedagogical skills. They propose that an effective educational strategy should emphasize the development of personal and social competencies and the incorporation of real-world experiences into the learning process. Future research should explore the interactions between these competencies and investigate other potential influences on academic achievement, such as socio-economic factors or school culture (Grolnick et al., 1991; "Teacher Academic Supervision toward Learning Quality through Competence and Work Motivation of Teachers in A-Accredited Public Senior High Schools in Barito Kuala", 2022; Perl, 2021; Hermana et al., 2021; Frank, 2020; Bell et al., 2021).

### VI. LIMITATIONS AND FUTURE RESEARCH

As with any empirical investigation, this study has limitations. Recognizing these limitations can inform future research, which can then resolve these lacunae and increase our understanding of the complex influences on student academic achievement.

Initially, the study's cross-sectional design offers a snapshot of the relationships between competencies and academic achievement at a particular moment in time. Therefore, the direction of causality cannot be determined with certainty. Future longitudinal studies may provide a more nuanced comprehension of how these competencies influence academic achievement over time.

Second, while our study adopted a multidimensional perspective by incorporating a variety of competencies, it did not account for the interaction between these competencies. Future research could investigate the potential interaction effects between various competencies on academic achievement. For instance, how might the combination of personal and professional competencies improve academic outcomes?

Thirdly, our research relied on self-reported measures of



competencies, which may have resulted in response bias. Despite the fact that these measures are widely employed and validated, they may not adequately convey the breadth and complexity of competencies. Future research might employ a multi-method approach, combining self-reports with peer-reports, teacher evaluations, or firsthand observations, for instance.

Lastly, our study did not account for contextual factors, such as socioeconomic status, parental involvement, school resources, and culture, which could affect academic achievement (Sirin, 2005). Including these variables could provide a more complete picture of the factors that influence academic outcomes.

Future research could also investigate additional competencies not addressed in this study, such as digital literacy or creativity, particularly in light of ongoing pedagogical shifts toward 21st-century skills (Voogt & Roblin, 2012). In addition, the influence of emerging educational trends, such as online learning and personalized education, on the relationships between competencies and academic achievement could be an intriguing area of study.

Despite the fact that this study has provided valuable insights into the role of various competencies in student academic achievement, there is still a great deal of space for additional research. We anticipate that future research will continue to investigate this complex and vital area of education, thereby contributing to the development of more effective educational practices.

## REFERENCES

- [1] Ainoutdinova, I., Tregubova, T., Ng, J., Kopnov, V. (2022). New Roles and Competencies Of Teachers In The Ict-mediated Learning Environment Of Russian Universities. *Obraz. nauka*, 1(24), 191-221. <https://doi.org/10.17853/1994-5639-2022-1-191-221>
- [2] Akbiyik, M. (2019). Üniversite Öğrencilerinin Yaşam Doyumlarının Çeşitli Değişkenler Bağlamında İncelenmesi. *Eğitim Bilimleri Dergisi*. <https://doi.org/10.15285/maruaeab.620972>
- [3] Alsahafi, N., Shin, S. (2017). Factors Affecting the Academic And Cultural Adjustment Of Saudi International Students In Australian Universities. *jis*, 1(7), 53-72. <https://doi.org/10.32674/jis.v7i1.245>
- [4] Anderson, J., Gerbing, D. (1988). Structural Equation Modeling In Practice: a Review And Recommended Two-step Approach. *Psychological Bulletin*, 3(103), 411-423. <https://doi.org/10.1037/0033-2909.103.3.411>
- [5] Anderson, S., Christenson, S., Sinclair, M. F., & Lehr, C. A. (2012). Check & connect: A comprehensive student engagement intervention: Implementation guide. Institute on Community Integration, University of Minnesota.
- [6] Awang, Z. (2012). Structural equation modeling using AMOS graphical approach. UPENA.
- [7] Awang, Z. (2014). SEM made simple: A gentle approach to learning structural equation modeling. MPWS Rich Publication.
- [8] Bell, M., Cake, M., King, L., Mansfield, C. (2021). Identifying the Capabilities Most Important For Veterinary Employability Using A Modified Delphi Process. *Veterinary Record*, 7(190). <https://doi.org/10.1002/vetr.777>
- [9] Byrne, B. M., & Van de Vijver, F. J. (2010). Testing for measurement and structural equivalence in large-scale cross-cultural studies: Addressing the issue of nonequivalence. *International Journal of Testing*, 10(2), 107-132.
- [10] Chen, X., Rubin, K., Li, D. (1997). Relation Between Academic Achievement and Social Adjustment: Evidence From Chinese Children. *Developmental Psychology*, 3(33), 518-525. <https://doi.org/10.1037/0012-1649.33.3.518>
- [11] Doménech-Betoret, F., Roselló, L., Gómez-Artiga, A. (2017). Self-efficacy, Satisfaction, and Academic Achievement: The Mediator Role Of Students' Expectancy-value Beliefs. *Front. Psychol.*, (8). <https://doi.org/10.3389/fpsyg.2017.01193>
- [12] Dong, X., Kalugina, O., Vasbieva, D., Rafi, A. (2022). Emotional Intelligence and Personality Traits Based On Academic Performance. *Front. Psychol.*, (13). <https://doi.org/10.3389/fpsyg.2022.894570>
- [13] ElShanti, A., Aldirawi, A., Mehjez, A., Zaida, M., Nada, I., Nada, M. (2020). The Prevalence and Severity Of Gingivitis In High School Students In Gaza Strip - Palestine. *jmrhs*, 9(3), 1098-1105. <https://doi.org/10.15520/jmrhs.v3i9.256>
- [14] Frank, J. (2020). School-based Practices For the 21st Century: Noncognitive Factors In Student Learning And Psychosocial Outcomes. *Policy Insights from the Behavioral and Brain Sciences*, 1(7), 44-51. <https://doi.org/10.1177/2372732219898703>
- [15] Gamtessa, L. (2021). Correlation Of Students' Academic Achievements At a Professional Course Of Ethics And Pediatrics Clinical Practice At Mizan-tepi University, South Nations, Nationalities And People's Region, Ethiopia. *Global Pediatric Health*, (8), 2333794X2110037. <https://doi.org/10.1177/2333794x211003799>
- [16] Gorghiu, G., Bîzoi, M., Santi, E. (2022). Exploring Students' Perception Concerning Educational Coaching: Premises For the Design And Implementation Of An Online Coaching Platform In Academia. *PO*, 4(13), 142-157. <https://doi.org/10.18662/po/13.4/511>
- [17] Grolnick, W., Ryan, R., Deci, E. (1991). Inner Resources For School Achievement: Motivational Mediators Of Children's Perceptions Of Their Parents. *Journal of Educational Psychology*, 4(83), 508-517. <https://doi.org/10.1037/0022-0663.83.4.508>
- [18] Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective* (Vol. 7). Pearson.
- [19] Hermana, P., Zuraida, Z., Suganda, L. (2021). Indonesian Pre-service Teachers' Mindfulness, Social Emotional Competence, and Academic Achievement. *IJERE*, 4(10), 1176. <https://doi.org/10.11591/ijere.v10i4.21272>
- [20] Hernayati, R. (2022). The relationship between the principal's academic supervision and teacher professional development with the performance of ecce teachers in tanjung sub-district, tabalong regency. *E-chief Journal*, 2(2), 41-49. <https://doi.org/10.47191/ijsshr/v5-i9-52>
- [21] Hughes, J. (2011). Longitudinal Effects Of Teacher and

- Student Perceptions Of Teacher-student Relationship Qualities On Academic Adjustment. *The Elementary School Journal*, 1(112), 38-60. <https://doi.org/10.1086/660686>
- [22] Jobst, S., Lindwedel, U., Marx, H., Pazouki, R., Ziegler, S., König, P., ... & Feuchtinger, J. (2022). Competencies and Needs Of Nurse Educators And Clinical Mentors For Teaching In The Digital Age – A Multi-institutional, Cross-sectional Study. *BMC Nurs*, 1(21). <https://doi.org/10.1186/s12912-022-01018-6>
- [23] Kunter, M., Klusmann, U., Baumert, J., Richter, D., Voss, T., Hachfeld, A. (2013). Professional Competence Of Teachers: Effects On Instructional Quality and Student Development. *Journal of Educational Psychology*, 3(105), 805-820. <https://doi.org/10.1037/a0032583>
- [24] Kupchina, E. (2021). Higher Education In the Era Of Global Digitalization: Main Trends And Development Prospects.. <https://doi.org/10.51508/intcess.2021141>
- [25] Lin, M., Chen, H., Liu, K. (2017). A Study Of the Effects Of Digital Learning On Learning Motivation And Learning Outcome. *EURASIA J Math Sci Tech Ed*, 7(13), 3553-3564. <https://doi.org/10.12973/eurasia.2017.00744a>
- [26] Lozano, R., Barreiro-Gen, M., Pietikäinen, J., Gago-Cortes, C., Favi, C., Munguía, M., ... & Gladysz, B. (2021). Adopting Sustainability Competence-based Education In Academic Disciplines: Insights From 13 Higher Education Institutions. *Sustainable Development*, 4(30), 620-635. <https://doi.org/10.1002/sd.2253>
- [27] Malecki, C., Elliot, S. (2002). Children's Social Behaviors As Predictors Of Academic Achievement: a Longitudinal Analysis. *School Psychology Quarterly*, 1(17), 1-23. <https://doi.org/10.1521/scpq.17.1.1.19902>
- [28] Marini, A., Safitri, D., Lestari, I., Zahari, M., Iskandar, R., Sudrajat, A., ... & Siregar, R. (2022). Empowering Entrepreneurship Competences Through Socialization Of Educational Entrepreneurship For Elementary School Teachers In Jakarta. *jcse*, 1(3), 38-44. <https://doi.org/10.22219/jcse.v3i1.18144>
- [29] Marsh, H., Morin, A., Parker, P., Tripathi, M. (2014). Exploratory Structural Equation Modeling: An Integration Of the Best Features Of Exploratory And Confirmatory Factor Analysis. *Annu. Rev. Clin. Psychol.*, 1(10), 85-110. <https://doi.org/10.1146/annurev-clinpsy-032813-153700>
- [30] Mitevski, O., Popeska, B., Petrusheva, K. (2020). Motivation For Academic Work Of Student – Future Physical Education Teachers. *PROSOC*, 1(7), 200-209. <https://doi.org/10.18844/prosoc.v7i1.4894>
- [31] Nabilla, A., Anggita, I., Robiulkhair, I., Kaserero, S., Rahman, D. (2023). Professional Competence Of School Counselor In Providing Guidance and Counseling Service At School., 206-211. [https://doi.org/10.2991/978-2-494069-95-4\\_25](https://doi.org/10.2991/978-2-494069-95-4_25)
- [32] Niswah, W., Su'ad, S., Utaminingsih, S. (2021). The Influence Of Academic Supervision and School Culture On Teacher's Pedagogic Competency In Demak District. *Inopendas J. Ilm. Kependidikan*, 1(4). <https://doi.org/10.24176/jino.v4i1.5972>
- [33] Perl, C. (2021). Solving the Ideal Worlds Problem. *Ethics*, 1(132), 89-126. <https://doi.org/10.1086/715289>
- [34] Pristyowati, D., Rahayu, S., Wahidmurni, W., Supriyanto, A. (2021). The Education Function Of Effectiveness On Leadership Behavior, School Climate, and Teacher Performance. *MANAGERIA J. Manaj. Pend. Islam*, 1(6), 37-48. <https://doi.org/10.14421/manageria.2021.61.03>
- [35] Rafii, F., Saeedi, M., Parvizy, S. (2019). Academic Motivation In Nursing Students: a Hybrid Concept Analysis. *Iranian J Nursing Midwifery Res*, 5(24), 315. [https://doi.org/10.4103/ijnmr.ijnmr\\_177\\_18](https://doi.org/10.4103/ijnmr.ijnmr_177_18)
- [36] Rouhi, A., Kavousian, J., Geramipour, M., Keramati, H., Arabzadeh, M. (2022). The Mediating Role Of Achievement Goals In the Relationship Between The Personality Trait Of Grit And Academic Engagement And Procrastination Among High School Students: A Structural Model. 1964-1945), 20(107, علوم روانشناختی. <https://doi.org/10.52547/jps.20.107.1945>
- [37] Saleh, S., Arismunandar, A., Anshari, A. (2021). The Contribution Of Academic Supervision and Teacher Working Group On Teachers' Pedagogical Competence. *j. of. sci. technol.*, 18-25. <https://doi.org/10.26858/est.v7i1.15468>
- [38] Salleh, A., Yusof, S., Othman, N. (2017). Measuring Sustainable Service Quality Of Malaysian Water and Sewerage Companies: A Pilot Study. *JBSEE*, 1(3), 11-22. <https://doi.org/10.26710/jbsee.v3i1.25>
- [39] Sarmadan, S., Hali, F. (2021). The Pedagogics Competence Of Indonesian Language Education Students As Teacher Candidates In Microteaching. *AJIP*, 3(13), 2363-2372. <https://doi.org/10.35445/alishlah.v13i3.773>
- [40] Schuler, H., Dittmer, J., Borruso, L., Galli, J., Fischnaller, S., Anfora, G., ... & Janik, K. (2022). Investigating the microbial community of *Cacopsylla* spp. as potential factor in vector competence of phytoplasma. *Environmental Microbiology*, 24(10), 4771-4786.
- [41] Schuler, K., Baer, M., McDermott, R., Smith, P. (2022). A Psychometric Pilot Study Examining the Functions Of Suicidal Communications Using Irt And Factor Analysis. *IJERPH*, 16(19), 10081. <https://doi.org/10.3390/ijerph191610081>
- [42] Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of educational research*, 75(3), 417-453.
- [43] Sivrikaya, A. (2019). The Relationship Between Academic Motivation and Academic Achievement Of The Students. *Asian Journal of Education and Training*, 2(5), 309-315. <https://doi.org/10.20448/journal.522.2019.52.309.315>
- [44] Smith, J. D., & Johnson, S. R. (2010). The relationship of school and home social environments to the academic achievement of African American high school students. *Urban Education*, 45(5), 608-628.
- [45] Südkamp, A., Kaiser, J., Möller, J. (2012). Accuracy Of Teachers' Judgments Of Students' Academic Achievement: a Meta-analysis.. *Journal of Educational Psychology*, 3(104), 743-762. <https://doi.org/10.1037/a0027627>
- [46] Surat, S., Yun, P. (2023). The Relationship Between Introvert and Extrovert Personality Towards Students' Academic Achievement In Primary School. *IJARPED*, 1(12). <https://doi.org/10.6007/ijarped/v12-i12/16228>
- [47] Suyatno, S., Istiningsih, E., Wantini, W., Hidayati, D., Fajria, A., Zulaiha, S. (2023). Contribution Of Academic Supervision To Vocational Students' Learning Readiness. *IJERE*, 2(12), 710.

- <https://doi.org/10.11591/ijere.v12i2.24422>
- [48] Tella, A. (2007). The Impact Of Motivation On Student's Academic Achievement and Learning Outcomes In Mathematics Among Secondary School Students In Nigeria. *EURASIA J MATH SCI T*, 2(3). <https://doi.org/10.12973/ejmste/75390>
- [49] Uaidullakzy, E. (2021). Formation Of Information and Professional Competence Of Primary School Teachers With Online Education. *WJET*, 4(13), 838-850. <https://doi.org/10.18844/wjet.v13i4.6269>
- [50] Voogt, J., & Roblin, N. P. (2012). A comparative analysis of international frameworks for 21st century competences: Implications for national curriculum policies. *Journal of curriculum studies*, 44(3), 299-321.
- [51] Wachjuni, D., Ulpah, M., Pribadi, B. (2022). Comparison Of Pedagogical and Professional Competencies Of Certified And Uncertified Teachers In State Elementary Schools. *INSANIA: J. Pemikir. Alternatif Kependidikan*, 1(27), 82-94. <https://doi.org/10.24090/insania.v27i1.6419>
- [52] Wang, J., Yang, X., Xi, Y., He, Z. (2022). Is Green Spread? the Spillover Effect Of Community Green Interaction On Related Green Purchase Behavior. *IJERPH*, 11(19), 6571. <https://doi.org/10.3390/ijerph19116571>
- [53] Westhuizen, L., Kühn, S. (2023). Handmade Clothing Consumption As a Means Of Self-expression. *JFMM*. <https://doi.org/10.1108/jfmm-07-2021-0175>
- [54] Yue, J., Chen, G. (2020). Competence Of Pharmacy Mentors: a Survey Of The Perceptions Of Pharmacy Postgraduates And Their Mentors. *BMC Med Educ*, 1(20). <https://doi.org/10.1186/s12909-020-02188-0>
- [55] Zhang, H., Hu, S., Xu, D., Shen, H., Jin, H., Yang, J., ... & Zhang, X. (2022). Risk Factors For Carbapenem Resistant Gram Negative Bacteria (Cr-gnb) Carriage Upon Admission To the Gastroenterology Department In A Tertiary First Class Hospital Of China: Development And Assessment Of A New Predictive Nomogram. *IDR*, (Volume 15), 7761-7775. <https://doi.org/10.2147/idr.s396596>
- [56] Zhou, Q., Main, A., Wang, Y. (2010). The Relations Of Temperamental Effortful Control and Anger/frustration To Chinese Children's Academic Achievement And Social Adjustment: A Longitudinal Study. *Journal of Educational Psychology*, 1(102), 180-196. <https://doi.org/10.1037/a0015908>