

# Measuring Teacher Personality Competence: Era 5.0 Challenges for Teachers in the Indonesian Archipelago

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## ABSTRACT

Teachers in archipelagic regions face challenges such as limited access, geographical isolation, and cultural diversity, particularly in the Society 5.0 era. This study aims to assess the feasibility of an instrument for measuring teacher personality competency in this context. Using a quantitative approach, the study was conducted in Maluku Province, with a multistage random sample of 752 teachers from 94 schools. The instrument employed a modified four-point Likert scale, and data analysis was conducted using the PLS-SEM method to evaluate the measurement and structural models. Key findings include: 1) Exploratory Factor Analysis (EFA) identified six dominant factors and 29 items to measure teacher personality competency; 2) The measurement model demonstrated feasibility, with construct validity confirmed through convergent validity (loading factors > 0.70 and Average Variance Extracted > 0.50) and discriminant validity (Fornell-Larcker criterion and Heterotrait-Monotrait Ratio < 0.90). Reliability was supported by Cronbach's Alpha, Rho\_A, and composite reliability values all exceeding 0.70. These results indicate that the instrument is suitable for assessing teacher personality competency in island regions, helping address the challenges of the Society 5.0 era. The study has important implications for Indonesian education stakeholders, providing a validated tool to guide teacher performance evaluations.

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## 1. INTRODUCTION

Teachers are at the forefront of advancing education, acting as key facilitators in transferring knowledge and educating people the whole time. They are always required to follow the flow of technological progress and wade through the complexities of the modern world. In addition to facing such conditions, especially in Indonesia, they face diversity and very complex differences. The thousands of islands that comprise Indonesia's maritime landscape make the educational site characterized by diverse geographical, social, cultural, ethnic, religious, and linguistic differences. This diversity presents both opportunities and challenges for teachers in providing quality education. The Indonesian archipelago's unique social and cultural characteristics require adaptable and versatile teachers.

Each region in Indonesia has different customs, languages, and traditions, de-manding an understanding and appreciation of the local context (Acciaioli, 2016). Teachers must have the ability to navigate diverse cultural landscapes and engage effectively with students from diverse backgrounds. They must be able to meet the needs of students by fostering an inclusive and culturally sensitive learning environment. Furthermore, they are required to have and master competencies maturely to face various challenges of Indonesian diversity. Following Law No. 14 of 2005, one of the competencies that must be mastered by teachers is personality competence (Minister of Education and Culture, 2005). A teacher's personality can affect the achievement of the learning process (Romualdi et al., 2023; Sharma et al., 2012; Stronge, 2018). Teachers with good personalities are expected to be able to instill good character in students.

The application of teacher personality competencies can be adopted from the Big Five Personalities including extraversion, openness to experience, conscientiousness, agreeableness, and neuroticism (Huszczo & Endres, 2017; Rings & Allehyani, 2020). The relationship between components in the top five personalities can reveal valuable experiences in the learning process and have an impact on classroom management, student engagement, and teacher-student relationships (Christophersen et al., 2016; Inda-Caro et al., 2019; Pianta et al., 2012). These five components can make relevant contributions to the competencies that teachers should have in the Society 5.0 Era to become trustworthy and followable individuals. As in Javanese philosophy, the teacher is a figure who can be "admired and imitated".

According to the Regulation of the Minister of National Education No. 16 of 2007, teachers in Indonesia are expected to demonstrate several key personality traits. These include adhering to national religious, legal, social, and cultural norms; embodying honesty, integrity, and serving as role models for students and the community. Teachers should also be individuals who are steady, stable, mature, wise, and authoritative. Additionally, they are expected to exhibit a strong work ethic, high levels of responsibility, pride in their profession, and self-confidence. Upholding the professional code of ethics is also a fundamental requirement. A teacher's personality plays a critical role in the overall success of education, particularly in the effectiveness of the learning process.

The challenges faced by teachers in achieving educational success in the 21st century are becoming increasingly complex, as they must equip students to compete and contribute within a global society. To address these challenges, 21st-century education and learning can focus on several key aspects: fostering student-centered learning, promoting collaboration, encouraging meaningful learning experiences, and integrating education with the community. Connecting learning with the community helps students expand their understanding beyond the classroom, enabling them to contribute to the global community and make a significant impact on their surroundings. Furthermore, teachers play a vital role in inspiring students to prepare for their roles in society, particularly in the context of the evolving Society 5.0 Era.

The era of Society 5.0 requires teachers to have competencies that are in tune with technological advances and the digital landscape of today's society (Pitula, 2021). One of the crucial aspects emphasized in the framework of teacher competence of the Society 5.0 Era is technological literacy. Teachers must be adept at effectively navigating and utilizing digital technologies to improve teaching, promote active learning, and engage students in meaningful ways (Supriyanto et al., 2020; Tondeur et al., 2019). By leveraging technology, they can create innovative learning experiences, incorporate multimedia resources, and foster digital literacy skills among their students.

The variety of problems and challenges faced by teachers makes it a separate problem to measure teacher personality competence in the Society 5.0 Era, especially for teachers in the Indonesian archipelago. The issue is how to measure the competence of the teacher's personality fairly. The conditions and characteristics of teachers in the archipelago are certainly very different from other regions. Teachers in the archipelago often face limited educational resources and facilities, including textbooks, teaching materials, laboratories, and state-of-the-art learning equipment (Baixinho et al., 2020). Therefore, measuring tools are needed that can be used to assess personality competence accurately (valid) and reliably (reliable) to produce fair measurements.

Measuring teacher personality competence is important in advancing education in Indonesia. Assessing the teacher's personality competence provides valuable insights for the improvement of the teacher's personal qualities. It can be a self-intervention to develop professionals on an ongoing basis. In addition, measuring teacher personality competence provides a basis for designing training programs and coaching to improve teacher competence in general. However, measuring the personality competence of teachers in the Indonesian archipelago has its challenges (Prihono et al., 2023). The wide geographical distribution, cultural diversity, and limited resources in some regions are obstacles to implementing standardized assessment tools and collecting reliable data. In addition, variations in local cultures and contexts can influence the interpretation and application of personality traits, which require a culturally sensitive measurement approach (Choi et al., 1999). Given Indonesia's diversity and the ever-growing demands on teachers, it is imperative to explore and understand the challenges that exist in measuring these competencies.

Thus, policymakers, educators, and stakeholders can develop tailored strategies and interventions to support teachers in their ongoing professional development and ultimately improve the quality of education in the Indonesian archipelago. Therefore, this study aimed to measure the instrument feasibility of the 5.0 era teacher personality competency, especially in the archipelago using six main constructs, namely teamwork, loyalty, society, attitude, stability, and classroom management.

## 2. METHODS

This study employed quantitative methods and factor analysis to examine the elements shaping teacher personality competence (Awang et al., 2015). The research targeted all teachers in Maluku Province, Indonesia. A multistage random sampling technique was used, incorporating both stratified and cluster random sampling based on educational levels (Tipton, 2013). Schools were grouped according to elementary, junior high, and senior high school levels, resulting in a sample of 94 schools and 752 teachers serving as respondents. Data were collected using a Likert scale questionnaire with four response options. For positive statements, the options were Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1); for negative statements, the scale was reversed to avoid respondents defaulting to a neutral category, often seen with five-choice questionnaires. The framework of the instrument, based on the initial construct, is detailed in Table 2.

Data analysis involved empirically testing the feasibility of the items to identify underlying factors and examine the characteristics and relationships between variables through exploratory factor analysis (EFA) (Marsh et al., 2014; Prihono et al., 2022). The results of these tests were used to determine the number of factors associated with the measured variables. Following this, Partial Least Squares Structural Equation Modeling (PLS-SEM) was applied to assess the instrument's feasibility based on construct validity and reliability using Confirmatory Factor Analysis (CFA). The criteria for evaluating the instrument's feasibility included demonstrating construct validity and reliability. Validity was assessed through convergent and discriminant validity (Fauzan et al., 2023; Fornell & Larcker, 1981; Henseler et al., 2015), while reliability was evaluated using Cronbach's Alpha, Rho\_A, and composite reliability (Hair et al., 1992; Nunnally & Bernstein, 1994; Retnawati, 2016). Satisfying these validity and reliability requirements ensures the instrument is suitable for measuring the personality competence of teachers in the Society 5.0 Era.

**Table 1.** Instrument Grid of Teacher Competency in Society Era 5.0

Construct	Sub Construct	Total Item	Sources
A.1. Teamwork	A.1.1. Teachers have a strong willingness to collaborate and learn with and/or from others	3	(De Jong et al., 2019; Nahar, 2022)
A.2 Loyalty	A.2.1. Teachers uphold and implement the teacher professional ethics code	4	(Malone, 2020; Nolan & Molla, 2017; Prihono & Supahar, 2018)
A.3. Society	A.3.1. Teachers are actively involved in social community activities	4	(Marker et al., 2018)
A.4 Attitude	A.4.1 Teachers become honest, noble characters, and role models for students and society	4	(Latuapo, 2023; Wakano et al., 2021; Zulela et al., 2022)
A.5. Stability	A.5.1 Teachers become steady, stable, mature, wise, and authoritative	3	(Istiyono et al., 2021; Lubis, 2019)
A.6. Classroom management	A.6.1 Teachers are able to be facilitators for students A.6.2 Teachers can get to know individual students in the learning process	12	(Bakar, 2018; Mogeja & Joshua, 2022; Oderinu et al., 2020; Romualdi et al., 2023)

### 3. FINDINGS AND DISCUSSION

The feasibility of the instrument to measure the competence of teacher personality in the archipelago was reviewed by proving validity and estimating reliability. Proof of validity starts from exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The EFA results showed that the Keyser Mayer Oikin (KMO) value was 0.893 ( $> 0.50$ ) with a value of Approx. The Chi-Square on Bartlett's Test of Sphericity was 6787.272 with 406 degrees of freedom and a Sig. value of 0.000 ( $p < 0.01$ ). It showed that the sample size of 752 used in this factor analysis was sufficient. Furthermore, the anti-image correlation coefficient value of 29 items is  $> 0.5$ , so that only 29 items can be used for further analysis. The unusable item was item A\_3\_4 with an anti-image correlation coefficient value of 0.432 ( $< 0.5$ )

The results of the analysis showed the magnitude of the eigenvalue on the teacher's personality competency instrument containing 6 dominant factors with an eigenvalue of  $> 1$ . The cumulative value of variance from the 6 factors is 56,167, indicating a total explainable variance of 56,167%. This value was quite good because the total explainable variance exceeds 50%. The results showed that there was 1 steep in the scree plot. It proved that there was 1 measurable dominant component in the teacher's personality competency instrument. The scree-plot graph showed the eigenvalues starting to ramp up on the 4th component. Determination of the number of factors in EFA using the principal component analysis method through varimax measurement results and only items with a loading factor of  $> 0.4$  can be used in this study. To simplify visualization, the loading factor value displayed only had a value of  $> 0.4$ .

The EFA results showed that there were 29 items contained in 6 factors as indicators of teacher personality competence and proof of validity using CFA by SmartPLS 3.0 software. Proof of validity was done through convergent validity and discriminant validity. Proving convergent validity included measuring Loading Factor (LF) and Average Variance Extracted (AVE) values, while discriminant validity was reviewed from Fornell-Larcker and Heterotrait-Monotrait Ratio (HTMT). The results of proving convergent validity are presented in Table 3.

**Table 3.** Table of Convergent Validity Proving Results

Indicator	Item	LF (>0,70)	AVE (>0,50)	Indicator	Item	LF (>0,70)	AVE (>0,50)
Teamwork	A_1_1	0,758	0,640	Stability	A_5_1	0,729	0,525
	A_1_2	0,791			A_5_2	0,842	
	A_1_3	0,811			A_5_3	0,779	
Loyalty	A_2_1	0,882	0,796	Classroom management	A_6_1	0,708	0,691
	A_2_2	0,719			A_6_2	0,786	
	A_2_3	0,852			A_6_3	0,780	
	A_2_4	0,888			A_6_4	0,762	
Society	A_3_1	0,799	0,613	A_6_5	0,734		
	A_3_2	0,789		A_6_6	0,787		
	A_3_3	0,760		A_6_7	0,771		
Attitude	A_4_1	0,787	0,736	A_6_8	0,781		
	A_4_2	0,768		A_6_9	0,822		
	A_4_3	0,808		A_6_10	0,753		
	A_4_4	0,875		A_6_11	0,818		
				A_6_12	0,724		

Table 3. shows that all items (29 items) have a loading factor value of more than 0.70 and AVE values in Teamwork indicators of 0.640 (> 0.50), Loyalty of 0.796 (> 0.50), Society of 0.613 (> 0.50), Attitude of 0.736 (> 0.50), Stability of 0.525 (> 0.50) and Classroom management of 0.691 (> 0.50). It proved that the convergent validity of the instruments used in terms of the value of the loading factor and AVE had been met. The results of proving the validity of the discriminant are in Table 4.

**Table 4.** Results of proving the validity of discriminants

		Teamwork	Loyalty	Society	Attitude	Stability	Classroom management
Criteria Fornell-Larcker	Teamwork	0,583					
	Loyalty	-0,033	0,630				
	Society	0,260	-0,102	0,783			
	Attitude	-0,036	0,242	0,048	0,486		
	Stability	0,241	-0,082	0,329	0,206	0,724	
	Classroom management	0,265	0,128	0,278	0,254	0,576	0,700
Ratio Heterotrait-Monotrait (HTMT)	Teamwork						
	Loyalty	0,104					
	Society	0,326	0,181				
	Attitude	0,223	0,780	0,259			
	Stability	0,292	0,210	0,535	0,460		
Classroom management	0,252	0,148	0,365	0,315	0,768		

The results of proving the validity of the discriminant in terms of the Fornell-Larcker value and the Heterotrait-Monotrait Ratio (HTMT) obtained a coefficient value less than 0.90 (< 0.90). Thus, the

validity of the discriminant in the instrument used has been fulfilled. The results of estimating the reliability of the teacher personality competency instrument are presented in Table 5.

**Table 5.** Results of estimating the reliability of the teacher's personality competency instrument

	Cronbach's Alpha	rho_A	Reliability Komposit
A. 1_Teamwork	0,838	0,791	0,753
A. 2_Loyalty	0,768	0,724	0,894
A. 3_Society	0,886	0,887	0,826
A. 4_Attitude	0,733	0,815	0,820
A. 5_Stability	0,761	0,818	0,764
A. 6 Classroom management	0,903	0,916	0,919

Table 5 shows the value of Cronbach's Alpha, Rho\_A, and CR reliability coefficients on the instrument of  $> 0.70$  ( $\alpha > 0.70$ ). Thus, the instrument was reliable for measuring teacher personality competence. The results of Cronbach's Alpha reliability estimation showed that the value of the coefficient obtained for each construct was in the range of 0.733 to 0.903, where Classroom management gave the highest coefficient value (0.903) while Attitude gave the lowest coefficient value (0.733).

Furthermore, Rho\_A reliability estimation showed that the value of the coefficient obtained for each construct was in the range of 0.724 to 0.916, where Classroom management gave the highest coefficient value (0.916) while Loyalty gave the lowest coefficient value (0.724). The estimated reliability of CR showed that the value of the coefficient obtained for each construct was in the range of 0.753 to 0.919 where Classroom management gave the highest coefficient value (0.919) while Teamwork gave the lowest coefficient value (0.753). The results showed that the instrument was feasible to measure teacher competence in island areas, especially in facing the challenges of Era 5.0. The teacher personality competency instrument consists of 6 constructs/indicators and 29 statement items.

### Discussion

This study aims to measure the instrument feasibility of the 5.0 era teacher personality competency, especially for teachers in the archipelago, using six main constructs, namely teamwork, loyalty, society, attitude, stability, and classroom management. Each construct has subconstructs to develop into statement items. Sub construct of teamwork, such as teachers having a strong willingness to collaborate and learn with and or from others; Sub construct of loyalty such as teachers upholding and implementing their professional code of ethics; Sub constructs of society such as teachers being actively involved in society; Sub constructs of attitude such as teachers become honest individuals, have a noble character, and role models for students and society; Sub construct of stability such as teachers become a steady, stable, mature, wise, and authoritative person; And sub construct of classroom management such as teachers can be the facilitators for students and able to get to know individual students in the learning process.

Efforts to empirically validate constructs involve examining the factors within observation items and identifying the characteristics and relationships between variables. This is achieved through item feasibility testing using exploratory factor analysis (EFA). The purpose of EFA is to uncover the latent structure of the observed variables by identifying similar factors and hidden dimensions that influence the measured variables (Karl & Dag, 1994; Park et al., 2002; Wakano et al., 2021). This exploratory method helps determine the number of factors or constructs needed to explain the relationships among a set of indicators, based on the size of the factor loadings. Additionally, researchers applied PLS-SEM to analyze complex structural equation models.

The first step in establishing the structural equation model is to validate the constructs using Confirmatory Factor Analysis (CFA), which involves assessing both convergent and discriminant validity. Convergent validity refers to the extent to which an item accurately measures the construct it

is intended to measure (Hair et al., 2016). In this study, convergent validity was tested by analyzing the Loading Factor (LF > 0.70) (Nelson et al., 2019; Rodrigues et al., 2018) and the Average Variance Extracted (AVE > 0.50) (Bartlett et al., 2001). Discriminant validity was evaluated using the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT < 0.90) (Anas et al., 2023; Maqsoom et al., 2023). The analysis revealed that all 29 items had Loading Factor values between 0.708 and 0.888, exceeding the 0.70 threshold, and AVE values ranging from 0.525 to 0.796. Additionally, both the Fornell-Larcker criterion and HTMT showed coefficients below 0.90, confirming that the instrument meets the required discriminant validity standards.

The advantage of PLS-SEM compared to other analyses is in the form of reliability results used to achieve consistency of overall item results. It is used to determine items that can measure the same construct in the score value (Hair et al., 2016). Therefore, the findings of this study have taken into account the values of Cronbach's Alpha coefficients > 0.70,  $Rho\_A > 0.70$ , and composite reliability > 0.70 (Hair et al., 2016; Nunnally & Bernstein, 1994; Retnawati, 2016). It is done to ensure adequate internal consistency. The results of reliability estimation obtained that all coefficient values are greater than 0.7 (> 0.7). This shows that the proposed indicators have good or reliable statistical values, so that the construct proposed in this study can be used to evaluate teacher personality competence by measuring teamwork, loyalty, society, attitude, stability, and classroom management.

The validity and reliability results demonstrate that the research instrument is suitable for measuring teacher personality competence in the Society 5.0 era, meeting the necessary analytical requirements for evaluating all aspects of constructs and sub-constructs. Assessing teacher personality competency is a critical component in evaluating the quality of education, especially in the context of Society 5.0. This era in education emphasizes character, morality, and role modeling (Latuapo, 2023; Nasrul et al., 2022), as knowledge can be supplemented by technology, but the development of soft and hard skills in students remains irreplaceable by technological advancements.

In the era of society 5.0, teacher readiness based on educational competencies, understanding, and utilization of IoT (Internet of Things), utilization of virtual or augmented reality, and use and utilization of AI (Artificial Intelligence) is needed. The presence of the Internet of Things (IoT) has become part of today's education system (Lapele et al., 2022). Therefore, the ability to understand and use various IoT-based equipment for the field of education, especially in the field of teaching, must be mastered. IoT is a condition that allows humans or objects to connect with anyone, anywhere, and anytime. IoT is a relatively new emerging technology to facilitate between the real and the virtual.

This research contributes to efforts to improve the quality of education by measuring teacher personality competencies. The research conducted has produced instruments for measuring teacher personality competence in the archipelago that have been tested for validity and reliability. Theoretically, the instrument was prepared after reviewing several theories about the competence of the personality of teachers of the Society Era 5.0. The instrument design has been reviewed and assessed by experts according to their scientific fields.

#### 4. CONCLUSION

Measuring teacher personality competence in the Indonesian archipelago presents unique challenges, requiring a reliable and valid instrument to assess this competence accurately. The study results indicate that the instrument's items have a Loading Factor greater than 0.70, an AVE between 0.525 and 0.796, and discriminant validity coefficients below 0.90. Additionally, the instrument's reliability is strong, with all coefficient values exceeding 0.7, confirming the indicator's reliability. These findings have significant implications for education stakeholders in Indonesia, especially in the context of the Society 5.0 era. Central and local governments can leverage these results to shape policies and programs aimed at enhancing teacher personality competence, as well as identifying areas that need improvement to meet the demands of modern education. Teacher education and training institutions can also use this research to refine curricula and training programs to better align with current needs.

For teachers and future educators, this instrument serves as a valuable tool for self-assessment and professional growth. Educational institutions, such as schools and madrasahs, can apply these insights to improve their educational management practices. Ultimately, the broader community will benefit from better-prepared teachers who can equip future generations to meet emerging challenges, contributing to a more advanced and competitive society. Thus, this instrument is highly effective for measuring teacher personality competence and improving teacher performance.

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