WHO AM I AS A TEACHER? DEVELOPMENT AND VALIDATION OF AN INDONESIAN TEACHERS' PROFESSIONAL IDENTITY SCALE

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Abstract

A teacher's professional identity not only reflects a teacher's understanding of his or her role, but also shapes the way teachers respond to job demands, make professional decisions, and maintain commitment to teaching practice. A strong professional identity contributes to the quality of learning and the sustainability of the teaching profession, while a weak identity can hinder teacher performance and well-being. This study aims to validate the Indonesian Teachers' Professional Identity Scale (ITPIS) in teachers in Indonesia. The instrument consists of 37 items. Data were collected through questionnaire filling and analyzed using the Rasch model to evaluate the reliability, item fit, as well as psychometric characteristics of the instrument. The results of the analysis showed good psychometric quality, with a Cronbach's alpha of 0.91 and internal consistency and strong response stability. These findings confirm that ITPIS is a valid and reliable instrument to measure the professional identity of teachers in the context of Indonesian education.

Keywords: Rasch Model, Teachers Professional Identity, Instrumen Validity, Indonesian Teachers.

1. INTRODUCTION

Teachers play a noble role in shaping future generations through education. This recognition has long been embedded in the narrative of teachers as "unsung heroes" within the teaching profession. In the context of 21st-century education, teachers are no longer solely responsible for delivering subject matter; their roles now encompass fostering students' social and emotional skills, accommodating individual differences, collaborating with fellow teachers and parents, maintaining a high level of curiosity, and collecting, analyzing, and utilizing classroom data to improve the quality of learning (Viac & Fraser, 2020).

The challenges faced by the teaching profession have intensified in the global context. UNESCO estimates that approximately 69 million new teachers are needed worldwide to achieve education targets by 2030. Conversely, around 80% of currently active teachers are reported to be considering leaving the profession (Mann & Falecki, 2020). This situation indicates serious pressures that threaten the sustainability of education systems. In Indonesia, teachers are also beginning to experience a loss of the "meaning of teaching" as a process of knowledge transfer (logos), due to a shift toward financial-oriented motivations (Nurtanto et al., 2022). In this context, teachers' professional identity becomes a critical prerequisite, particularly in relation to achieving

Sustainable Development Goal 4 (Quality Education) (Kovalcikiene & Buksnyte-Marmiene, 2021).

Teachers with a strong professional identity are better able to manage job demands through conscious and proactive efforts to modify how they work, which ultimately supports their well-being (Zhai et al., 2023). Furthermore, such teachers tend to feel greater pride in their profession, demonstrate higher resilience to work-related stress, and experience greater career satisfaction (Sun et al., 2022).

According to Beijaard et al. (2004), the foundation of teachers' professional identity is rooted in Erikson's psychological theory (1968), which conceptualizes identity as chronological and continuously evolving throughout the human lifespan. Identity, therefore, is not something one possesses, but something that develops over time. This perspective suggests that teachers' professional identity is dynamic rather than static, and should be understood as an ongoing process shaped by life experiences and career development.

In addition, Mead's (1934) symbolic interactionism theory posits that the self is developed through transactions with the environment. According to Mead, the self emerges only within social environments where communication occurs, as individuals learn to take the roles of others and evaluate whether their actions align with social expectations.

Teachers' professional identity is constructed historically, socially, and culturally (Widodo et al., 2020). Research by Ilfiandra et al. (2019) emphasizes that teachers develop their professional identity through social interaction processes within educational contexts and teaching experiences. Teachers who engage in educational practices, share professional experiences, and participate in learning communities continuously shape and refine their professional identity over time. Thus, the formation of teachers' professional identity is influenced not only by internal individual factors but also by social interactions and contextual environments in which teachers practice.

Beijaard, Verloop, and Vermunt (2000) further developed the concept of Teacher Professional Identity in their study Teachers' Perceptions of Professional Identity: An Exploratory Study from a Personal Knowledge Perspective. They identified three key categories of professional identity. First, teachers as subject matter experts, referring to teachers' deep understanding of the concepts within their subject domains. This perspective arises from the view that teaching cannot be reduced to content delivery and practice alone, as doing so neglects the complexity of the teaching process.

Second, teachers as pedagogical experts, emphasizing that teaching involves not only outcomes but also moral and ethical dimensions. These dimensions are integral to teachers' professional thinking and actions and must be consciously reflected upon. Teachers frequently face dilemmas, such as supporting students with personal difficulties or educating learners from diverse social and cultural

backgrounds, making it essential for teachers to recognize the norms and values embedded in school interactions.

Third, teachers as didactical experts, highlighting teachers' roles as facilitators of student learning. This concept emerged as a synthesis between traditional instructional models, which are often considered rigid, and constructivist models, which may lack structure. This shift influences teachers' roles in learning processes, including transitions from teacher-centered to student-centered learning approaches.

The conceptual framework of teachers' professional identity proposed by Beijaard et al. was selected due to its theoretical and contextual relevance to educational policy in Indonesia. The dimensions of subject expertise, pedagogical expertise, and didactical expertise align with teacher competencies outlined in the Indonesian Ministry of National Education Regulation No. 16 of 2007, particularly professional and pedagogical competencies. This alignment renders Beijaard's framework not only conceptually robust but also practically applicable within national educational policies and practices.

Professional identity refers to teachers' perceptions of their roles and the important aspects of their profession, as well as how they evaluate themselves as members of a professional group (Beijaard et al., 2004). Thus, professional identity reflects both personal self-evaluation and social identification within the teaching profession. Previous research also conceptualizes teachers' professional identity as encompassing both personal and contextual dimensions (Samsudin et al., 2021).

As further emphasized by Beijaard et al. (2023), teachers' professional identity is shaped by both personal and contextual factors. Personal factors include teachers' values, norms, and principles that are lived and considered important (Beijaard et al., 2000). Contextually, professional identity is also influenced by teachers' interactions within professional communities, shaping how they think and act within educational environments (Beijaard et al., 2023). Moreover, teachers' professional backgrounds typically involve networks, partnerships, and collaborative activities within and across schools (Hai et al., 2023).

However, research findings indicate that teachers' professional identity is often questioned in terms of teacher development programs and their implementation. Teacher education programs tend to focus heavily on theory without sufficiently supporting pre-service teachers in constructing their professional identity (Alsup, 2006). De Albéniz-Garrote and Gómez (2020) also argue that a strong professional identity is essential for teachers to effectively address real-world situations and challenges in schools.

Furthermore, school policies, accountability demands, and the dynamics of educational environments often obscure the learning outcomes of teacher education programs. The resulting gap between idealism and classroom realities creates pressures that weaken teachers' professional identity and compel teachers to continuously adapt to rapidly changing educational contexts (Sydnor et al., 2024; Halal

Orfali et al., 2024). This demonstrates that teachers' professional identity is not solely a structural issue but also a cultural one.

Teachers' professional identity reflects how they perceive themselves within their profession and the extent to which they feel connected to educational values and goals (Zhao, 2022). Individuals with a strong professional identity are more likely to view challenges as opportunities for professional growth rather than as burdens that undermine their well-being (Ren et al., 2021). Moreover, Cece et al. (2022) emphasize that teachers' well-being is more strongly influenced by pedagogical factors than by subject-matter expertise alone, highlighting the importance of how teachers interpret and internalize their roles as educators.

Therefore, valid and reliable instruments are essential for accurately assessing teachers' professional identity, enabling their use in professional development planning, educational policy evaluation, and the improvement of teacher education quality (Hanna et al., 2020; Nias, 2002).

Several instruments measuring Teacher Professional Identity have been developed in previous studies, including the Teacher Professional Identity Scale (Wong & Liu, 2024) involving 412 pre-service teachers, the Accounting Teacher Professional Identity Scale (Fahmi et al., 2022) involving 351 accounting teachers in Indonesia, and the Teachers' Professional Identity Questionnaire (Samsudin et al., 2021) applied to teachers in Asia and Africa. However, these instruments still present several limitations.

Previous instruments primarily focus on pre-service teachers' experiences, limiting the contextual relevance of subscale interpretations to actual teaching practice. Additionally, instruments developed within the Indonesian context remain limited to specific subject areas, and the construction of the Teachers' Professional Identity Questionnaire has largely relied on expert consensus approaches.A systematic review also emphasized that future research should continue refining and validating existing instruments, including ongoing examinations of their reliability over time and the validity of their use in predicting and informing appropriate school interventions (Marraccini et al., 2020).

Therefore, this study aims to develop the Indonesian Teacher Professional Identity (ITPI) instrument based on the conceptual framework proposed by Beijaard, Verloop, and Vermunt (2000). Furthermore, the instrument will be examined using an Item Response Theory (IRT) design with the Rasch model to measure teachers' professional identity in the Indonesian context.

Item Response Theory (IRT) evaluates measurement quality based on the characteristics of individual items through the estimation of discrimination (a) and difficulty (β) parameters (Zhang et al., 2023). In these tests, each item is analyzed separately based on the individuals' responses, providing more accurate estimates of their true abilities (Meguellati et al., 2024). Furthermore, the Rasch model is a robust approach for validating measurements at both the item and test levels (Zynuddin &

Sumintono, 2024). This approach enables a more in-depth identification and evaluation of the ITPIS instrument. Therefore, the aim of this study is to analyze the items, persons, and overall ITPIS instrument.

2. METHODOLOGY

This study employed a quantitative research method by developing the Indonesian Teachers' Professional Identity Scale (ITPI) based on the conceptual framework proposed by Beijaard, Verloop, and Vermunt (2000). The instrument consists of 37 items constructed in a five-point Likert scale, ranging from strongly disagree to strongly agree. The ITPI was designed to measure how teachers interpret and internalize their professional roles within the teaching and learning context, encompassing three dimensions: subject expert, pedagogical expert, and didactical expert.

The subject expert dimension represents teachers' perceptions of their subject-matter knowledge as a core component of their professional identity. The pedagogical expert dimension reflects teachers' values, attitudes, and relationships with students, while the didactical expert dimension describes teachers' roles in designing, facilitating, and managing learning processes. All items were formulated as declarative statements using a Likert-type response format.

Prior to data collection, the ITPI instrument underwent an expert judgment process to ensure the alignment of item content with the intended constructs and the clarity of each statement. Experts were asked to evaluate the relevance of each item to the dimensions of teachers' professional identity and the appropriateness of item wording in representing the intended indicators. In addition, a readability assessment was conducted to ensure that each statement could be clearly understood by respondents and would not result in ambiguous interpretations. Instrument quality was analyzed using the Rasch model, consistent with the principles of Item Response Theory (IRT), by examining item characteristics, respondent interactions, and response patterns (Fisher, 2007; Nurhudaya et al., 2019).

The sampling technique employed was convenience sampling. Data were collected through an online questionnaire distributed to teachers as respondents. Prior to completing the questionnaire, respondents were informed about the general purpose of the study and were assured of the confidentiality of their personal data. Participation in this study was voluntary, and no compensation or incentives were provided.

Data analysis was conducted using the Rasch model with the assistance of Winsteps software. First, item fit analysis was performed to determine whether each item functioned appropriately in measuring teachers' professional identity. This was followed by Wright map analysis to examine the distribution between respondents'

ability levels and item difficulty. Rating scale analysis was then conducted to assess whether the Likert scale categories were well understood by respondents.

In addition, Differential Item Functioning (DIF) analysis was carried out to identify potential item bias across respondent groups, using a significance level of $p < 0.05$. Subsequently, person fit analysis was conducted to evaluate the consistency of respondents' response patterns. Finally, as part of the validation of the Indonesian Teachers' Professional Identity Scale, reliability and unidimensionality analyses were performed to assess the effectiveness and internal consistency of the instrument.

3. FINDINGS AND DISCUSSION

The demographic characteristics of the participants are presented in Table 1.

Table 1. Respondent Demographics

Category	Frequency	%
Gender		
Female	67	78.8%
Male	18	21.2%
Employment Status		
PNS	33	38.8%
P3K	15	17.6%
Honorary	20	23.5%
Foundation-Based Permanent Teachers	15	17.6%
Others	2	2.4%
Teaching Level		
Elementary	14	16.5%
Junior High School	31	36.5%
Senior High School	39	45.9%
Vocational High	1	1.2%
Teaching Experience		
<3 years	24	28.2%
5 years	5	5.9%
7 years	8	9.4%
>10 years	48	56.5%
Total	85	100%

3.1 Item Fit

Item fit, referred to in the Rasch model as Item Fit Order, indicates the extent to which items function appropriately in measuring the intended construct (Sumintono & Widhiarso, 2015). The criteria used to identify misfitting or outlier items were based on Boone (2014), as follows:

a) Outfit MNSQ values: 0.5 < MNSQ < 1.5

b) Outfit ZSTD values: −2.0 < ZSTD < +2.0

c) Point-Measure Correlation (Pt-Measure Corr): 0.40 < Pt-Measure Corr < 0.85

If an item fails to meet one criterion (e.g., MNSQ or Pt-Measure Corr) but satisfies another (e.g., ZSTD), the item may still be considered acceptable and retained without revision. The Rasch analysis results for the teacher professional identity instrument are presented in Table 2 :

Table 2. Item Fit

Item	Infit MNSQ	Outfit MNSQ	Outfit ZSTD	Pt-Measure Corr
S7	1.62	1.84	3.6	.39
P16	2.10	4.04	4.5	.13
P20	1.64	5.48	7.0	.17
D28	2.08	2.71	6.0	.31
D29	1.68	2.16	4.1	.30
D37	1.49	1.41	1.8	.45
Mean	1.04			
SD	.41			

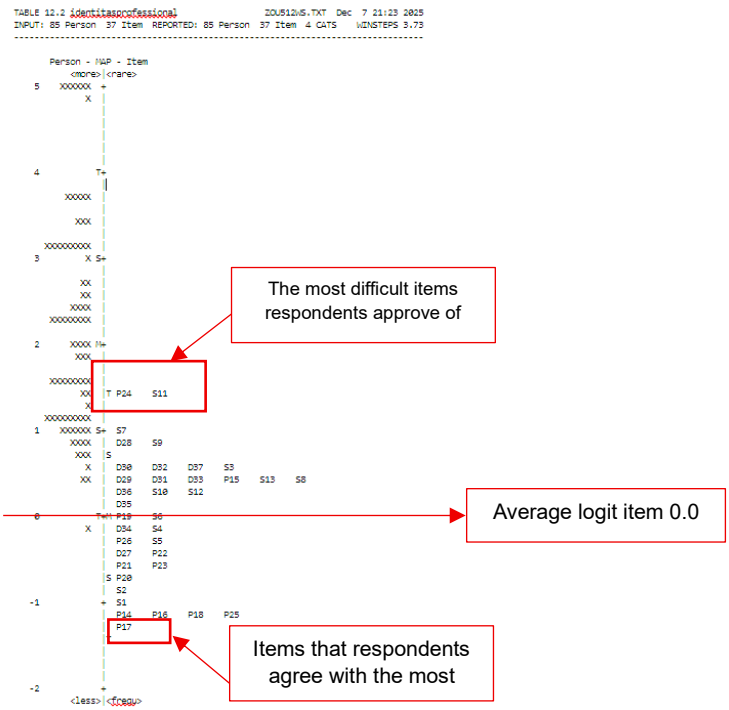
Item fit and misfit were also evaluated by examining Infit MNSQ values and comparing them to the sum of the mean and standard deviation (Sumintono & Widhiarso, 2014). The cutoff value was calculated as 1.04 + 0.41 = 1.45 logits. Based on this criterion, six items exceeded the threshold and were identified as misfitting item S7("*Profesi guru tidak memerlukan latar belakang jurusan yang relevan di bidang mata pelajaran yang di ajarkan"*), P16("*Saya menunjukkan sikap menghargai siswa melalui cara berkomunikasi yang sopan"*), P20("*Saya mengeluarkan kata-kata yag sopan ketika mengajar*"), D28("*Saya menjelaskan seluruh materi tanpa memberi ruang bagi siswa untuk berpendapat"*), D29("*Saat siswa bingung mengerjakan soal, saya memberi tahu jawabannya supaya cepat selesai"*), D37("*Saran siswa terkait cara saya mengajar tidak penting*").

Theoretically, the presence of misfitting items in Rasch analysis may indicate that these items measure aspects outside the primary construct or are influenced by contextual or normative factors among respondents (Tesio et al., 2024; Zubairi, 2006). Nevertheless, because these six items satisfied at least one of the other fit criteria, they were retained for further analysis.

3.2 Wright Maps Item

The Wright Map was developed not only to display the hierarchy of survey items but also to simultaneously illustrate the hierarchy between respondents and items (Boone et al., 2014). Figure 1 presents the item distribution map of this study.

Figure 1. Map of Item Distribution



More specifically, the item map illustrates the relative difficulty levels of the instrument's items. Based on Figure 1, Item 24 from the pedagogical expert dimension (I believe male students are usually more mischievous and difficult to manage) and Item 11 from the subject expert dimension (I solve instructional problems independently without involving colleagues in the same subject area) were the most difficult items for respondents to endorse. The difficulty of these items may be associated with teachers' tendencies to reject gender-based generalizations and with the strong value of collegiality within the teaching profession (Thaba-Nkadimene, 2024).

Conversely, Item 17 from the pedagogical expert dimension (I try to remember students' names so that they feel valued) was the easiest item to endorse. This finding aligns with the principles of the Child-Friendly School framework, which emphasizes respectful and supportive teacher–student interactions that acknowledge students' identities and dignity.

3.3 Rating Scales Diagnostic

Rating scale analysis was conducted to verify whether the response categories used in the instrument were clearly understood by respondents. Rasch model analysis provides a systematic procedure to test assumptions regarding rating scale functioning. The instrument employed a five-point Likert scale, ranging from Strongly Disagree to Strongly Agree.

Table 3. Rating Scale

Category	Observed Average	Andrich Threshold
1	.89	None
2	.59*	.03
3	1.11	-.1.11
4	2.53	1.08

As shown in Table 3, observed averages increased from +0.89 logits for Category 1 (Strongly Disagree) to +0.59 logits for Category 2 (Disagree), then increased to +1.11 logits for Category 3 (Agree) and further to +2.53 logits for Category 4 (Strongly Agree). However, the decrease in logits between Categories 1 and 2 indicates that respondents had difficulty distinguishing between Strongly Disagree and Disagree.

Another recommended indicator is the Andrich Threshold, which assesses whether the polytomous rating scale functions properly. Ideally, Andrich Thresholds should progress monotonically from negative to positive values. In Table 3, the thresholds do not follow the expected order, indicating that the response categories were not optimally differentiated. Therefore, the response options for this instrument should be simplified in future revisions.

3.4 Item Bias Detection

Detecting bias in a measurement instrument is essential to determine whether items function differently across specific respondent groups, such as gender or other demographic characteristics (Sumintono & Widhiarso, 2014). Item bias can be identified by examining probability values. When the probability value is less than 0.05 (5%), the item is considered biased for the respective demographic group, indicating that male and female respondents tend to provide systematically different responses to the item (Sumintono & Widhiarso, 2015). In this study, demographic variables analyzed for item bias included gender, employment status, and teaching location. The detailed results of the item bias analysis are presented below.

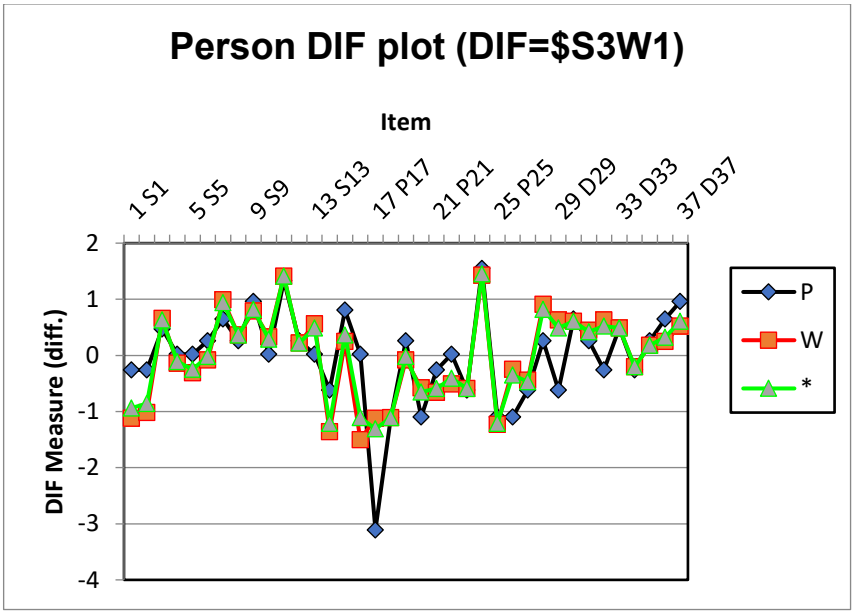
Table 4. Bias by Gender

Prob.	Mean-Square	Name Item
.0240	1.6945	P16

Based on Table 4, Item 16 from the pedagogical expert dimension yielded a probability value below 0.05, indicating gender-based bias. This finding suggests that

male and female teachers tend to perceive or respond to this item differently. The observed bias may reflect differences in gender-related perceptions regarding pedagogical attitudes and communication styles. For a clearer illustration, the results of the gender-based DIF detection are presented in the accompanying DIF plot, which visually demonstrates the differential functioning of Item 16 across gender groups.

Figure 2. Graphic DIF by Gender



Based on the DIF graph, the response patterns of male and female teachers differ clearly. For Item 16 (I address students using respectful and appropriate terms), the plot shows that male teachers exhibit a higher item difficulty estimate than female teachers. This indicates that Item 16 is relatively more difficult for male teachers to endorse; in other words, male teachers tend to require a higher level of the underlying trait to provide the same response as female teachers.

Gender-based differences in responses to Item 16 may be interpreted in light of previous research suggesting that female teachers are generally perceived as warmer and more approachable, and are more likely to employ inclusive and cooperative communication styles, whereas male teachers are more often associated with authority-oriented and directive approaches (Jony, 2025).

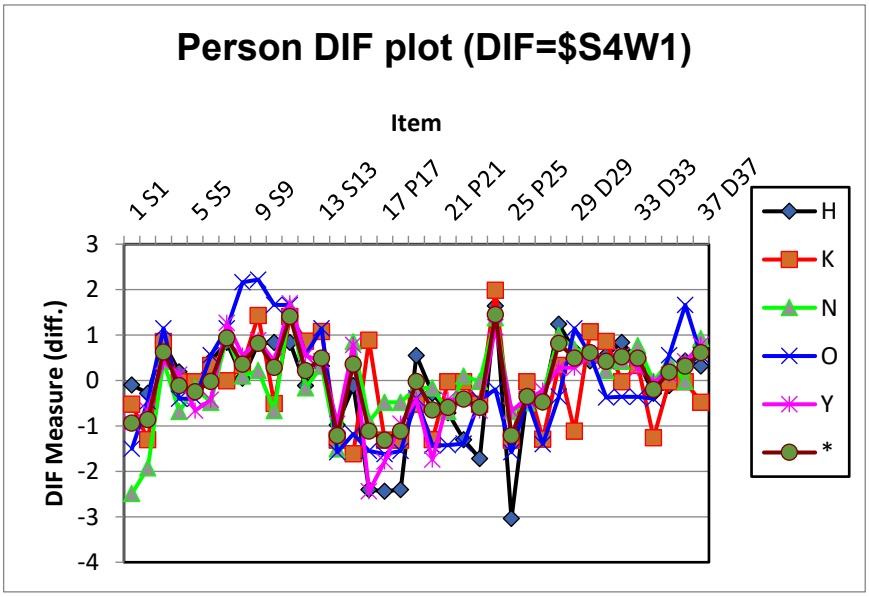
Table 5. Bias by Employment Status

Prob.	Mean-Square	Name Item
.0341	.8485	S1
.0367	.7138	S10
.0108	1.1657	P16

Based on Table 5, Items 1 and 10 from the subject expert dimension, as well as Item 16 from the pedagogical expert dimension, yielded probability values below 0.05, indicating item bias based on employment status. This finding suggests that these items function differently across groups of teachers with different employment statuses, including PNS, P3K, honorary, and foundation-based permanent teachers.

The observed item bias may be attributed to differences in perceptions and professional experiences across these employment categories. Variations in job security, institutional expectations, and professional roles may influence how teachers interpret and respond to specific items. For a clearer illustration, the results of the employment-status DIF analysis are presented in the accompanying DIF plot in the following figure.

Figure 3. Graphic DIF by Employment Status



Based on the DIF plot, differences in response patterns were observed among teachers with different employment statuses, including civil servant teachers (PNS), government contract teachers (P3K), honorary teachers, and foundation-based permanent teachers. For Item 1 (“Teaching makes my work feel meaningful”) and Item 10 (“I participate in subject-based teacher discussion groups or professional learning communities to discuss instructional issues”), honorary teachers demonstrated higher item difficulty estimates compared to teachers with P3K, foundation-based, or civil servant status. This indicates that Items 1 and 10 are relatively more difficult for honorary teachers, meaning that they tend to require a higher level of the underlying professional identity trait to endorse the same response categories as teachers with other employment statuses.

These findings are consistent with results from the OECD Teaching and Learning International Survey (TALIS), which report that teachers in non-permanent employment positions are more likely to experience challenges in finding meaning in their professional roles and in participating in professional development activities,

regardless of their intrinsic motivation or satisfaction with working conditions (OECD, 2025).

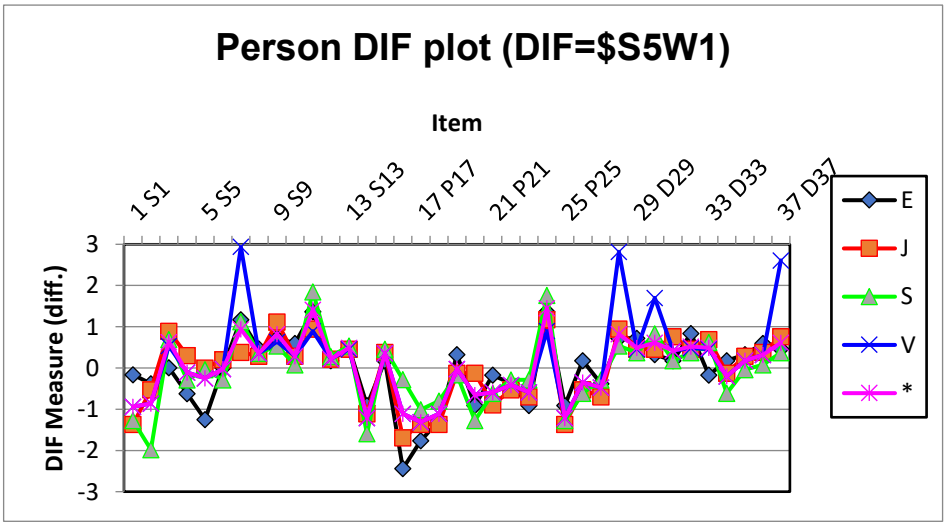
Another item identified as biased was Item 16 (“I address students using respectful or warm forms of address”), for which teachers with P3K status exhibited higher item difficulty estimates than teachers in other employment categories. This suggests that Item 16 is more difficult for P3K teachers, indicating that they require higher levels of the latent trait to provide similar responses compared to their counterparts. TALIS reports further suggest that teachers with non-permanent contracts or limited employment security tend to exercise greater caution in developing interpersonal relationships, which may make relational behaviors—such as using warm or affectionate forms of address—more difficult to endorse (OECD, 2025).

Table 6. Bias by Teaching Level

Prob.	Mean-Square	Name Item
.0226	.1.6471	S11
.0165	.1.3424	P16

Based on Table 6, Item 11 from the subject expert dimension and Item 16 from the pedagogical expert dimension exhibited probability values below 0.05. This indicates that these items demonstrate Differential Item Functioning (DIF) based on teaching location, suggesting the presence of item bias across different school levels. The observed bias reflects differences in perceptions among teachers teaching at elementary (SD/MI), junior secondary (SMP/MTs), senior secondary (SMA/MA), and vocational high schools (SMK). To provide a clearer illustration of these differences, the DIF detection results based on teaching location are presented in the following figure.

Figure 4. Graphic DIF by Teaching Level



Based on the DIF plot, response patterns differed among teachers across teaching levels, including elementary (SD/MI), junior secondary (SMP/MTs), senior secondary (SMA/MA), and vocational high schools (SMK). For Item 11 ("I resolve instructional problems independently without involving subject-matter colleagues") and Item 16 ("I address students using respectful or warm forms of address"), teachers at the senior secondary level (SMA/MA) exhibited higher item difficulty estimates compared to teachers at other school levels. This indicates that Items 11 and 16 are relatively more difficult for SMA/MA teachers, meaning that they tend to require higher levels of the latent professional identity trait to endorse the same response categories as teachers teaching at other levels.

These differences may be attributed to the distinct pedagogical and relational demands encountered at different educational levels. Teachers at higher secondary levels often face stronger academic specialization, performance pressures, and content-driven instructional demands, which may influence how they prioritize collaborative problem-solving and relational strategies with students (Kelly et al., 2022).

3.4 Person Fit

Sumintono and Widhiarso (2015:81) explain that person fit is used to examine the consistency of respondents when answering questionnaire items; in other words, person fit assesses the extent to which respondents' response patterns conform to the expected measurement model. The criteria applied are the same as those used for item fit, based on Boone (2014:164), as follows:

a) Outfit MNSQ values: 0.5 < MNSQ < 1.5
b) Outfit ZSTD values: −2.0 < ZSTD < +2.0
c) Point-Measure Correlation (Pt-Measure Corr): 0.40 < Pt-Measure Corr < 0.85

If one of the fit indices (MNSQ or Pt Measure Corr) does not meet the criteria while the ZSTD value remains within the acceptable range, or vice versa, the respondent is still considered to demonstrate a consistent response pattern. Therefore, the instrument can still be regarded as functioning effectively in measuring Indonesian teachers' professional identity. The results of the Rasch model analysis for the teachers' professional identity instrument are presented in the following table:

Table 7. Person Fit

Item	Infit MNSQ	Outfit MNSQ	Outfit ZSTD	Pt-Measure Corr
47WNJO	3.31	7.01	4.2	-.15
84WHEE	3.57	6.09	6.5	-.12
74WKSO	2.54	5.68	5.1	-.05
04WHJE	2.47	4.37	3.8	-.06

Item	Infit MNSQ	Outfit MNSQ	Outfit ZSTD	Pt-Measure Corr
70PKSO	2.23	3.57	4.4	.16
28PNJO	3.19	2.74	2.0	.08
72WNSO	2.96	2.16	2.5	.27
78WHEO	2.59	1.90	2.5	.53
55PHVE	2.56	1.67	1.6	.35
01WYEE	2.16	2.45	4.9	-.03
65WNSO	2.36	1.88	1.5	.14
73WKJE	2.27	1.53	1.0	.21
68WNJO	2.24	1.60	1.5	.30
71WNSO	2.24	1.42	.9	.25
48PNSO	2.17	1.24	.7	.45
80WHEE	2.17	1.81	2.0	.37
12WYSE	2.07	1.67	2.2	.65
Mean	1.27			
SD	.78			

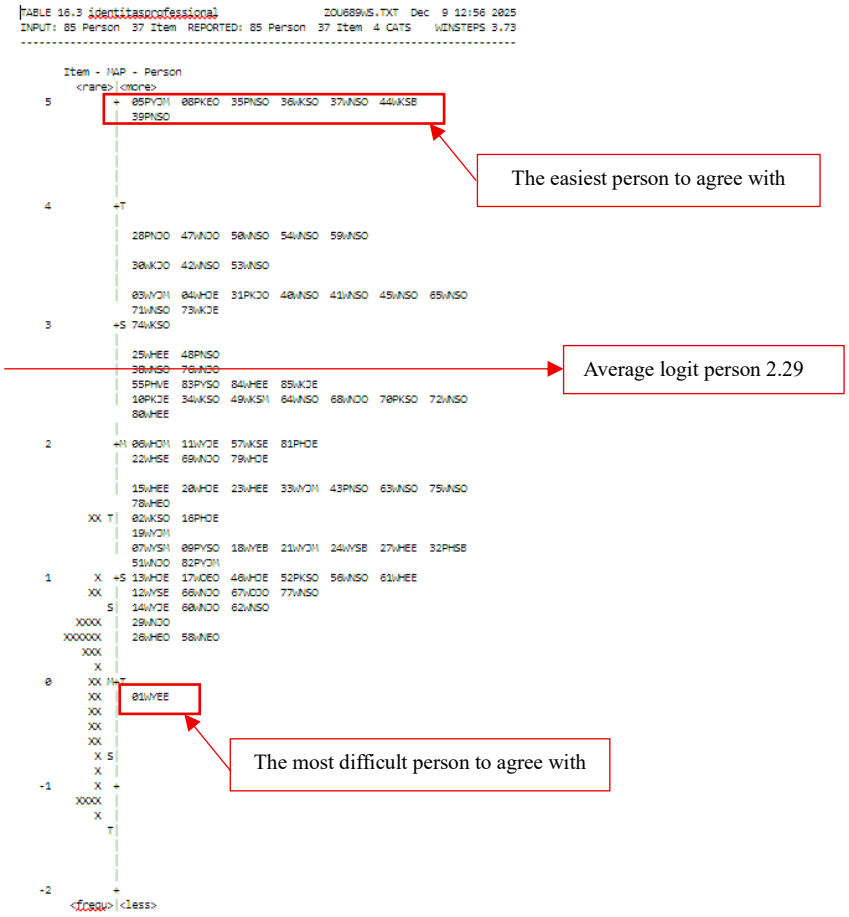
Similar to item fit analysis, person fit can also be examined by observing the INFIT Mean Square (MNSQ) values for each respondent. This is conducted by summing the mean and standard deviation values and subsequently comparing them with the logit value (Sumintono & Widhiarso, 2014:118). A logit value exceeding this threshold indicates that the respondent is misfitting or classified as an outlier.

Based on Table 7, the sum of the respondents' mean and standard deviation values is 1.27 + 0.78 = +2.05. According to this criterion, there are 17 respondents whose INFIT MNSQ values exceed this threshold, namely respondents with the following codes: 47WNJO, 84WHEE, 74WKSO, 04WHJE, 70PKSO, 28PNJO, 72WNSO, 78WHEO, 55PHVE, 01WYEE, 65WNSO, 73WKJE, 68WNJO, 71WNSO, 48PNSO, 80WHEE, and 12WYSE. This indicates that the abilities of these 17 respondents could not be fully predicted by the Rasch model. However, as these respondents still met at least one of the other three fit criteria, they remain identifiable and were therefore retained in the analysis.

3.5 Wright Maps Person

The Wright Map is developed not only to display the hierarchy of survey items but also to simultaneously represent the hierarchy between respondents and items on the same measurement scale (Boone et al., 2014). The following figure presents the distribution of respondents in the present study as illustrated in the Wright Map below:

Figure 1 Map of Respondent



Furthermore, the person map illustrates respondents' ability levels in endorsing the instrument items. Based on Figure 9, respondents with the codes 05PYJM, 08PKEO, 35PNSO, 36WKSO, 37WNSO, and 44WKSB were identified as having the greatest difficulty in agreeing with the item statements. In contrast, the respondent coded 01WYEE demonstrated the highest level of agreement, indicating the lowest difficulty in endorsing the items.

3.6 Reliability

Reliability refers to the consistency of measurement results when an instrument is administered repeatedly. This is in line with Sumintono and Widhiarso (2014), who define reliability as the extent to which repeated measurements yield consistent results or information.

Rasch modeling provides estimates of person reliability, item reliability, and instrument (test) reliability. Person reliability indicates the consistency of respondents' response patterns, item reliability reflects the quality and stability of the items in distinguishing respondent ability levels, and instrument or test reliability represents the interaction between respondents and items within the measurement model. According

to Sumintono and Widhiarso (2015). Reliability in the study is presented in the following table:

Table 8. Reliability

Reliability	Score	α
Person	.79	.91
Item	.89	

Based on table 8, the test reliability of the instrument was 0.91, indicating that the overall quality of the instrument, as reflected by the interaction between persons and items, was excellent. Furthermore, the person reliability coefficient was 0.79, while the item reliability coefficient reached 0.89. These results suggest that respondents' response patterns were sufficiently consistent and that the instrument demonstrated strong item quality and measurement stability.

3.7 Unidimensionality

The Rasch model analysis in this study employed Principal Component Analysis (PCA) of residuals, which is commonly used to examine the dimensionality of an instrument, namely its ability to measure the intended construct. An instrument can be considered unidimensional when the raw variance explained by the measures exceeds 20% (Sumintono & Widhiarso, 2015).

Table 9. Unidimensionality

Standardized Residual Variance	Eigen Value	Variance Unexplained (%)
Total raw variance in observations	52.1	100%
Raw variance explained by measures	15.1	29.0%
Raw unexplained variance (total)	37.0	71.0%

These findings indicate that the Indonesian Teachers' Professional Identity Scale demonstrates a conceptually coherent measurement structure and is empirically adequate to be treated as a unidimensional instrument within the Rasch analysis framework. Accordingly, the scores generated by this instrument can be interpreted as representing teachers' levels of professional identity along a single latent continuum.

4. CONCLUSION

The Indonesian Teachers' Professional Identity Scale demonstrates good psychometric quality. The findings indicate that the instrument is both valid and reliable for measuring teachers' professional identity, although the response scale structure requires further refinement. The unidimensionality analysis confirms that all

components of the instrument consistently measure teachers' professional identity as a single dominant latent dimension.

In addition, the Differential Item Functioning (DIF) analysis revealed that several items exhibited bias across gender, employment status, and teaching level, suggesting that teachers' experiences and interpretations of their professional roles vary across different work contexts. These findings indicate that such items should be carefully reviewed and refined in future applications of the instrument to enhance measurement fairness and precision.

Overall, this study provides empirical support for the Indonesian Teachers' Professional Identity Scale as a valid and reliable measurement tool within the Indonesian educational context. The results also highlight the importance of developing and adapting psychosocial instruments that are sensitive to the social, cultural, and structural contexts in which teachers perform their professional roles. Future research is encouraged to further examine the instrument's validity across more diverse teacher populations and to consider the influence of educational policies and work environments on the formation of teachers' professional identity.

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