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Bridging Policy and Practice in Competency Assessment of Indonesian Proficient Teachers: A Mixed Methods Gap Analysis

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Abstract: Bridging Policy and Practice in Competency Assessment of Indonesian Proficient Teachers: A Mixed Methods Gap Analysis. Objective: This study aims to analyze the need for developing teacher competency assessment instruments for proficient teachers. **Method:** This study used a mixed-methods approach with a convergent design. It begins by analyzing 457 Scopus-indexed publications from the past 46 years, identified through the keywords "teacher AND competency AND assessment AND instrument." A content analysis of five selected publications relevant to Indonesia was conducted to align the desired competencies of proficient teachers with the Regulation of the Director General of Teachers and Education Personnel Number 2626/B/HK.04.01/2023. To further explore gaps in existing instruments, the study utilized VOSviewer for visualization and additional content analysis, considering code, category, and theme. **Findings**: The findings reveal that current teacher assessment instruments in Indonesia are not yet aligned with the 2023 regulation, particularly lacking indicators focused on the competency of "evaluating and designing improvements." This is a critical performance area highlighted in the new policy framework, which aims to enhance student-centered education. **Conclusions**: As a result, it is concluded that this study highlights a clear and urgent need for the development of more contextualized assessment instruments that reflect updated regulatory expectations, address actual teacher performance needs, and support improved learning outcomes. These insights serve as a vital foundation for future research and policy-driven development of teacher assessment tools in Indonesia.

Keywords: competency assessment instruments, teacher competency, teacher competency instruments, proficient teacher competency.

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INTRODUCTION

Teacher competence is demonstrated through their performance in designing and implementing effective and efficient learning approaches, methods, and strategies to maximize students' potential and learning outcomes (Blegur, Ma'mun, Berliana, Mahendra, Bakhri, et al., 2024; Blegur, Wasak, & Manu, 2017; Meilinda, Putri, Zulkardi, Inderawati, & Desnita, 2024). This condition highlights that the assessment and evaluation of proficient teachers' competence is a crucial step in ensuring the quality of education (Aindra, Wibawa, & Nurhadi, 2022). Proficient teachers bear significant responsibility in designing and evaluating the management of learning, professional knowledge, self-management, and

relationship management to improve the quality of instruction (Ang et al., 2023; Asga et al., 2023). Competency assessment serves as an important tool to ensure that they possess adequate qualifications and skills in terms of pedagogy, personality, social, and professional aspects. This evaluation not only aims to assess teacher performance but also serves as a basis for mapping teacher competencies (Sumaryanta, Mardapi, Sugiman, & Herawan, 2018) and for professional teacher development (Kalim & Bibi, 2024). By identifying their strengths and weaknesses, teachers can improve themselves through in-house training (Fadil & Aryani, 2021), further studies (Blegur, 2025), or other developmental efforts. Competency assessment promotes teacher accountability and professionalism, focusing on fostering a culture of reflection and continuous improvement (Putnam et al., 2021). Overall, evaluating proficient teachers is crucial for maintaining the quality of learning and developing competitive, adaptable teachers who can respond to the challenges of an ever-evolving educational landscape.

Teacher competence is a set of skill attributes that are constantly dynamic, following the developments of the times (Ozturk, Kopish, & Ozturk, 2025), so teachers must be proactive in developing their competence to provide deep and meaningful learning experiences for their students (Blegur, 2025). The assessment instrument for the competence of proficient teachers plays an important role in ensuring the quality of teacher performance. However, in practice, various problems still hinder the effectiveness of the assessment. One of the main issues is that the instrument does not yet represent performance that is adaptive to the needs of the times, lacks validity and reliability, and is general and non-contextual. For example, a review of teacher performance assessment by Albu & Lindmeier (2023) and the research findings of Senden et al. (2025) demonstrate that teacher performance assessment instruments must reflect real-world situations and classroom interactions. Contextual inconsistencies, such as differences in reliability across subjects, indicate that non-contextualized instruments can produce biased assessments and underrepresent actual performance. To produce good teacher performance, the teacher competence assessment instrument must represent actual knowledge, skills, and dispositions in the learning context, integrate various abilities, collect evidence from diverse situations, and be evaluated by experts based on criteria relevant to teacher performance (Tigelaar & Janssen, 2012). It highlights the need for a reorientation away from an excessive focus on administrative aspects, such as document completeness, which often overlooks teacher performance in self-development efforts, such as conducting classroom action research that significantly affects their teaching practices in the classroom (Nahari, Latief, & Astuti, 2020).

The assessment of teacher competence has so far been considered a minor issue in education. Therefore, the evaluation of teacher competence as a basis for the sustainability of professional development is still lacking (Sumaryanta et al., 2018). In fact, assessing teacher competence, including that of proficient teachers, is an important part of efforts to improve the quality of education, as it reflects their performance (Salsabilla, Widodo, & Miswar, 2023). Currently, several instruments are used to comprehensively assess teacher competence. For example, Kang, Kang, Maeng, Park, & Jeong (2020) developed 44 items to assess teachers' competency using three indicators: science lesson preparation competence, science teaching performance competency, and science teaching professional development competency. Furthermore, Saleh, Kumaidi, Munadi, Mardalis, & Subando (2024) developed a 51-item teacher performance

assessment instrument in boarding schools based on the four teacher competencies according to the 2016 teacher performance appraisal management guidelines. Other instruments still differentiate between each type of competence, such as the teaching competence assessment instrument (Lumba, Blegur, & Bayu, 2021), the social competence assessment instrument (Rusijono et al., 2020), and others. Nevertheless, in line with the evolving challenges of teacher performance and the need for more student-centered learning, teacher competence assessment instruments also need to be regularly reviewed and evaluated to verify the availability of instruments that can predict teacher performance.

Teacher competencies must be measurable, and values must be assigned to specific measures so that performance in relevant situations can be predicted. Each teacher may differ in their competencies, as well as in their performance (Herppich et al., 2018). Regulation of the Director General of Teachers and Education Personnel Number 2626/B/HK.04.01/2023 (Ministry of Education, Culture, Research and Technology, 2023) has established a teacher competency model as the basis for performance and professionalism assessment, including for proficient teachers. This assessment includes four main dimensions: pedagogical, personal, social, and professional competencies. The assessment instruments are designed to reflect the level of mastery of each competency, which is then classified into five levels of mastery, ranging from basic to expert. Pedagogical competence assesses the teacher's ability to design and implement effective learning as well as conduct learning assessments. Personal competence reflects the teacher's integrity, emotional maturity, and professional attitude. Meanwhile, social competence assesses the teacher's ability to interact and collaborate with students, colleagues, parents, and the community. Professional competence emphasizes mastery of subject matter, understanding of the curriculum, and the teacher's ability to apply relevant science and technology. The assessment is conducted through various methods, such as classroom observation, portfolios, self-assessment, and reflection.

This study aims to analyze the need to develop an assessment instrument for the competence of proficient teachers by measuring actual performance, confirming desired performance, and identifying the causes of performance gaps as a credible basis for consideration when designing an assessment instrument for the competence of proficient teachers for future government regulations, self-assessment, and reflection.

METHOD

Measuring Actual Performance

The stage of measuring actual performance aims to identify the latest trends of potential variables to be developed so that problematic data in the actual performance can be accurately localized (Blegur, Ma'mun, Berliana, Mahendra, & Layao, 2024; Branch, 2010). At this stage, actual performance is contextualized and measured by conducting an analysis or bibliometric study of scientific publications from credible sources to minimize bias (Blegur, Mulyana, & Saparia, 2024). It means that the study does not measure the actual performance of subjects or participants to assess their performance, but instead evaluates the actual performance of publications on teacher competency assessment instruments to date. This limitation is intended to help researchers track and identify the development of science and technology in a particular field (in this study, limited to the development of teacher competency assessment instruments) in order to set future research priorities (Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021; Mejia, Wu, Zhang, & Kajikawa, 2021; Razali et al., 2024).

The researcher initiated the investigation on Sunday, June 1, 2025, by searching within the article title, abstract, and keywords using the search terms "*teacher AND competency AND assessment AND instrument*" on the Scopus search engine. A total of 457 documents were retrieved from the Scopus search engine, consisting of articles (79.6%), conference papers (16.2%), and book chapters (4.2%). These documents were then exported to Comma-Separated Values (CSV) format to analyze data metrics on publication trends and citation trends. The inspection results were also exported to Research Information Systems (RIS) format, which facilitates the analysis of publication metrics using the Publish or Perish (PoP) application (see Table 1).

Table 1. Citation metrics from PoP

Data category	*n*
Publication years	1979-2025
Citation years	46 (1979-2025)
Papers	457
Citations	4327
Cites/years	94.07
Cites/paper	9.47
Cites/author	1574.75
Papers/authors	180.95
Authors/paper	3.33
h-index	32
g-index	52
hl, norm	20
hl, annual	0.43
hA-index	10

Confirm Desired Performance

The stage of confirming the desired performance by reviewing newly published regulations on the teacher competency model. The regulation explicitly establishes performance levels that correspond to the competency levels of teachers according to their functional positions, ranging from first expert to principal expert. At this stage, the researcher conducts a content analysis of the published regulation that explicitly discusses the teacher competency model, namely the Regulation of the Director General of Teachers and Education Personnel Number 2626/B/HK.04.01/2023 (Ministry of Education, Culture, Research and Technology, 2023). This regulation serves as the object of study to confirm the performance expected by the government as part of fulfilling and developing the proficient teacher competency model. Thus, the functional roles and incentives for teachers at each of the three competency levels must be able to produce equivalent performance, rather than lower (level one and level two) than the government's expectations.

Furthermore, the data successfully collected from the object of government regulation were then analyzed using the content analysis procedure, specifically: First, consideration, where the researcher summarizes the text without altering its core meaning. Second is code, which determines the most appropriate label to describe the meaning of a certain concise unit. Third, a category that groups related codes based on similarities or differences in content or context. Fourth, theme, which is the formulation of the latent meaning that emerges from two or more categories and represents data interpretation, answering questions such as why, how, or in what way (Erlingsson & Brysiewicz, 2017). This content analysis process used the assistance of the NVivo 15 application.

Identify the Causes of Performance Gaps

After determining the level of performance gap, the next step is to identify the leading causes of the gap. Almost all causes of performance differences can be categorized as one of the following: lack of resources, lack of motivation, or lack of knowledge and skills (Branch, 2010). The identification of performance gaps aims at developing solutions oriented toward addressing

unmet performance problems (Blegur, Ma'mun, Berliana, Mahendra, & Layao, 2024). Thus, in this phase, the researcher analyzes various performance gaps from previous assessment instruments for proficient teachers' competencies comprehensively and in-depth to identify credible performance gaps, which are then used as critical notes to inform the development of future teacher competency assessment instruments.

Data from research trend results (bibliometric analysis) was exported into CSV and RIS formats to explore future research opportunities through tracking keyword trends and trends in titles and abstracts using the VOSviewer application. There are three interpretations of the VOSviewer analysis visualization. First, network visualization displays items in the form of labels or circles, where the size indicates their importance or weight, and the distance between items reflects the strength of the relationship between them. Second, overlay visualization is used for items that have certain scores, shown in a color gradient from blue (low score) to yellow (high score). Third, density visualization shows the density of items in an area, with yellow color representing regions with a concentration of items and high weight, following the same color gradient as in the overlay visualization (Jan van Eck & Waltman, 2023).

In addition to conducting a VOSviewer analysis, the researcher also performed a content analysis to identify current research gaps and recommend potential future research directions based on selected articles resulting from the bibliometric analysis. It includes addressing gaps in the development of assessment instruments for the competence of proficient teachers, in accordance with the latest government regulations. These findings will assist future researchers in ensuring that the competence assessment instruments they develop can represent the ideal performance of proficient teachers, namely the teacher's ability to evaluate and design knowledge about the principles of theory and practice in managing learning, professional knowledge, self-management, as well as relationship management in improving the quality of student-centered learning. Just like the content analysis process to confirm desired performance, the researcher used four analysis procedures, name consideration, code, category, and theme (Erlingsson & Brysiewicz, 2017), with the assistance of the NVivo 15 application.

■ RESULT AND DISCUSSION

Measuring Actual Performance (Quantitative Study)

Trends in Publication

First, the trend of documents by year. This data illustrates the number of publications related to the term "teacher competency assessment instrument" over the past 46 years (from 1979 to 2025). Between the early period and the late 1990s, the number of publications was very low and sporadic, with only around 1-2 articles published per year. Although in 1979, two publications were recorded, such as the article by Lofgren & Suzuki (1979) entitled "*An assessment of the competency of secondary school teachers in consumer education, economics, and personal finance,*" unfortunately, the number did not develop significantly, indicating minimal activity or not many were recorded. Between 2000 and 2012, there was a gradual increase, with the number of publications reaching 5-7 documents per year in 2011 and 2012.

The year 2024 recorded the highest peak with 60 documents, followed by high numbers in previous years, such as 2021 (52 documents) and 2023 (48 documents). Although 2025 shows a decline to 28 documents, this publication number is still much higher compared to previous periods (see Figure 1). Overall, the publication data shows a long-term growth trend with rapid acceleration in recent years. The decline in 2025

may be temporary or indicate a change in pattern. Understanding this publication context will help to achieve a more accurate interpretation of the observed trends. The issue of teacher competenc y assessment always attracts attention because it directly relates to teacher performance and the quality of learning. However, the development of up-to-date teacher competency assessment instruments must continue to align with student learning needs.

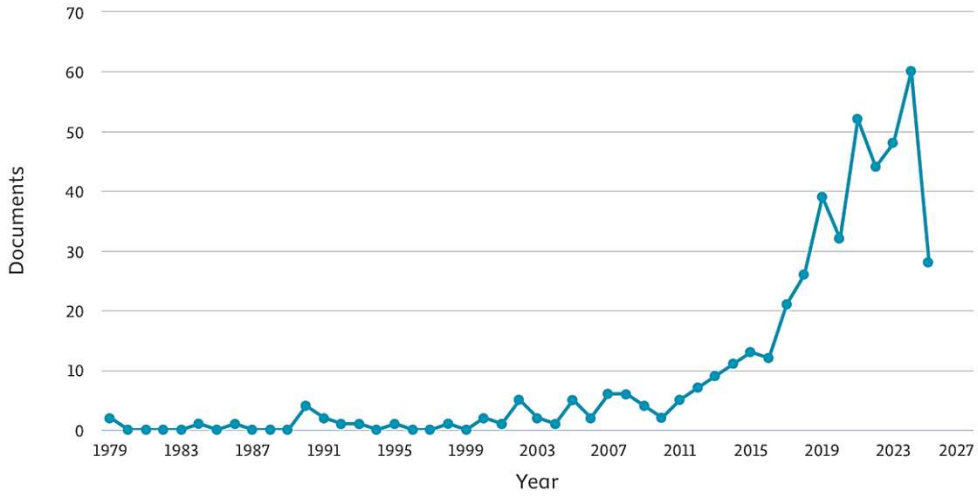

Figure 1. Document by years

Second, the trend of documents per year by sources. Figure 2 shows the distribution of the number of publications or contributions originating from various journals and academic conferences in the fields of education, social sciences, technology, and health sciences. Some journals or proceedings have a relatively high number of contributions, such as the Journal of Physics Conference Series (24 documents), AIP Conference Proceedings (18 documents), and Education Sciences (10 documents), which indicates their important role in disseminating research or scientific works in related fields. In addition, several journals make moderate contributions, with around 3–5 publications, such as *Educación Médica, Estudios Pedagógicos,* and *Kasetsart Journal of Social Sciences*, which also exhibit regional influence or focus on specific topics.

Many other journals only have one to two publications, indicating a vast and diverse research scope, as in the work of Schürmann, Bender, & Grebe (2021) *"Kompetenzdiagnose in der Berufsbildung von Pflegelehrpersonen* (Assessment of competencies of nursing teachers)." Overall, this data indicates that research in this field is spread across various sources, with a particular concentration in some leading journals and proceedings, while other journals serve as more specialized channels. It shows high diversity and multidisciplinarity in academic publications related to education and applied science fields. The wide distribution of publications from various sources explains that issues of teacher competency assessment can be accepted on various publication platforms because the topic of teacher competency assessment is so essential.

Third, the document trend by authors. This trend reports a list of authors who have contributed to a research field, with varying numbers of works or citations. Some authors, such as David Hortigüela Alcalá and Víctor Manuel López Pastor, occupy the top positions,

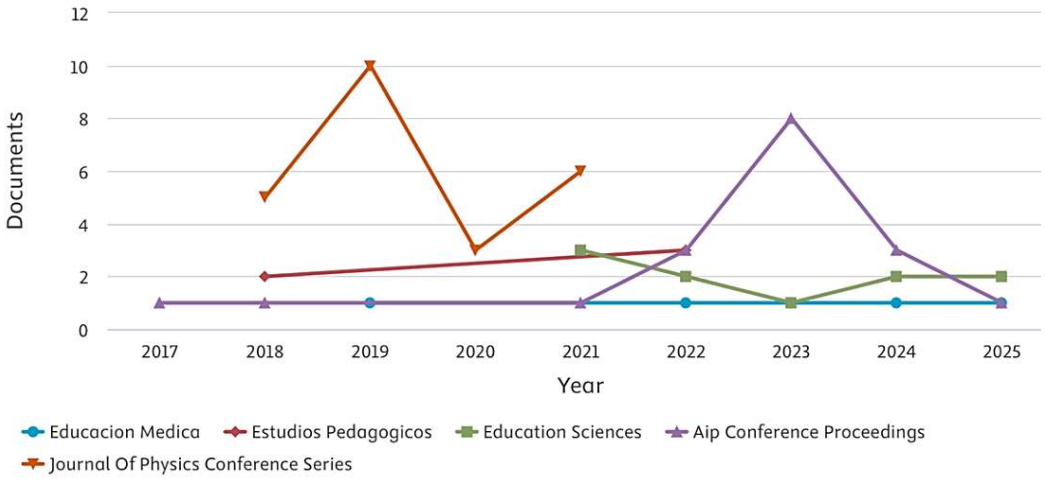

Figure 2. Document per year by source

each successfully contributing to the publication of four documents, showing their active roles and significant influence in the field. One of these is their collaborative publication in the article titled "*Creating assessment rubrics for final teacher education degree projects: A qualitative case study.*" (Fernández Garcimartín, López Pastor, Fuentes Nieto, & Hortigüela Alcalá, 2024). Next, there are several authors who have contributed to three publications, such as Christian Herrmann, Gabriele Kaiser, and several others, indicating a core group of authors with significant involvement (see Figure 3).

Then, many other authors have contributions ranging from one to two publications, including Hastuti, Soegiyanto, Suherman, Rahayu, & Utami (2022), with one publication article titled "*Improving the pedagogic competence of physical education teachers*." Moreover, this distribution shows a small group of authors with relatively high contributions and a large number of authors with fewer contributions. This pattern is common in the academic world, where some researchers often lead or play significant roles in specific fields due to their expertise in instrumentation, assessment, or physical education teacher competence. Meanwhile, other authors contribute only once as a fulfillment of final assignment requirements, such as theses or dissertations. It indicates an active research field with broad collaboration and participation.

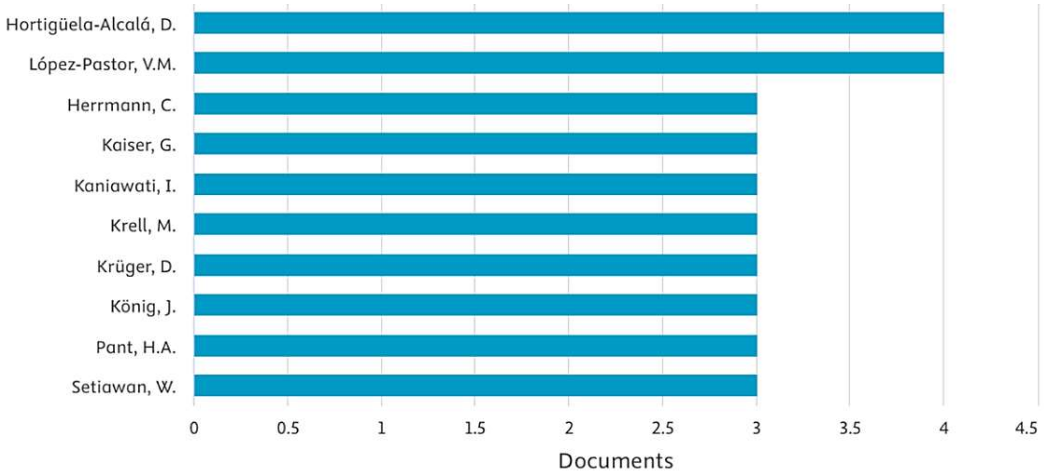

Figure 3. Document by authors

Fourth, document by affiliation. This data can be traced as an institutional collaboration opportunity because it shows the distribution of publication or research contributions based on educational and research institutions from various countries. Universitas Pendidikan Indonesia occupies the top position with 19 contribution publication documents, followed by Universitas Negeri Yogyakarta (11 documents) and Universitas Negeri Malang (10 documents), indicating the dominance of Indonesian institutions in the context of this research. This reflects these institutions' strong commitment to teacher professional development, particularly in developing competency instruments. All three are the leading Teacher Training Institutions in Indonesia, with a strategic mandate to prepare professional teachers. Their research focuses on assessment, educational evaluation, and teacher quality improvement, making them a dominant contributor in this field. In addition, several universities in Spain, such as *Universidad de Valladolid* (8 documents), *Universidad de Burgos* (7 documents), and *Universidad de Salamanca* (7 documents), also show significant research activity on the topic related to teacher competency assessment instruments.

Not only that, if we observe Figure 4, universities in Germany, such as Freie Universität Berlin (7 documents) and Universität Duisburg-Essen (5 documents), as well as several universities from Malaysia and Australia, also appear with relatively substantial contributions. This distribution shows the diversity of institutions active in the research field, with an intense concentration in several major universities in Asia and Europe. Other institutions from various parts of the world, although with fewer contributions, also participate in demonstrating the global reach of academic collaboration. Overall, this data illustrates the pattern collaboration and academic productivity among universities, dominated by several academic centers that are the main contributors to the current research field or topic.

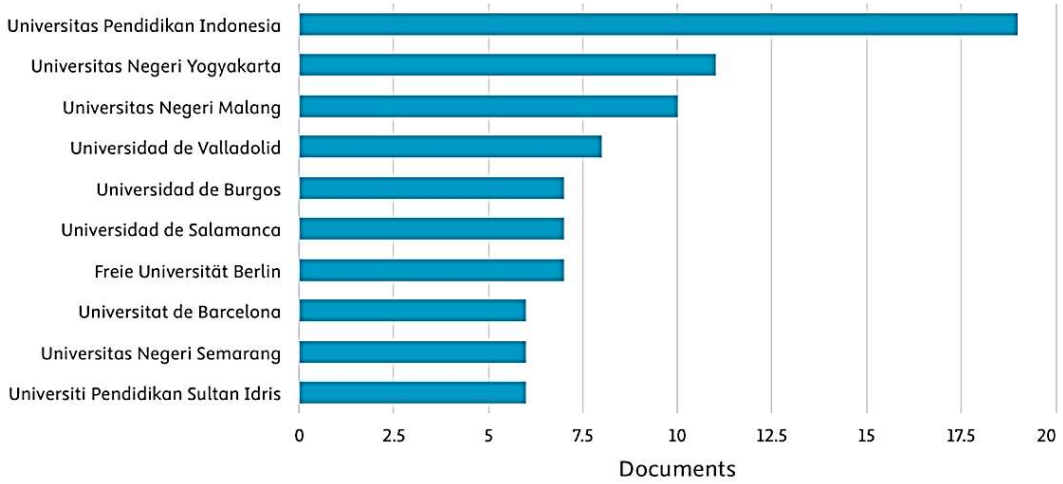

Figure 4. Document by affiliation

Fifth, the document trend by country. This trend illustrates the distribution of research or publication contributions by the researchers' country of origin. Consistent with the findings in Figure 4, the discussion in this section reveals the dominance of Indonesia in the topic of teacher competency assessment instruments, with the country successfully occupying the top position, contributing 73 publications, followed by Spain with 69 publications, and the United States with

55 publications. Below them, Germany also plays a significant role, with 43 documents. Latin American countries such as Mexico (23 documents), Chile (22 documents), and Peru (7 documents) are also active in this academic contribution. For example, an article contributed by Peruvian authors entitled "*Evidencias de validez y confiabilidad del DigCompEdu CheckIn en docentes de una universidad privada peruana*" (Gallardo-Echenique, Tomás-Rojas, Bossio, & Freundt-Thurne, 2023).

Meanwhile, Asian countries such as Malaysia (22 documents), Thailand (18 documents), China (12 documents), and Taiwan (6 documents) also show significant participation in publications on related topics. Other European countries, such as Switzerland and the United Kingdom (each with 13 documents), the Netherlands (9 documents), and Italy (4 documents), also consistently contribute actively. This distribution indicates the diversity and global reach of research activity, with the largest concentration in Asia, Europe, and North America, as well as participation from countries in Africa, the Middle East, and Oceania, albeit in smaller numbers. The presence of the "Undefined" category, with 11 documents, indicates that some data have not yet been identified by country of origin. However, overall, this pattern reflects a broad international collaboration network in the related research field.

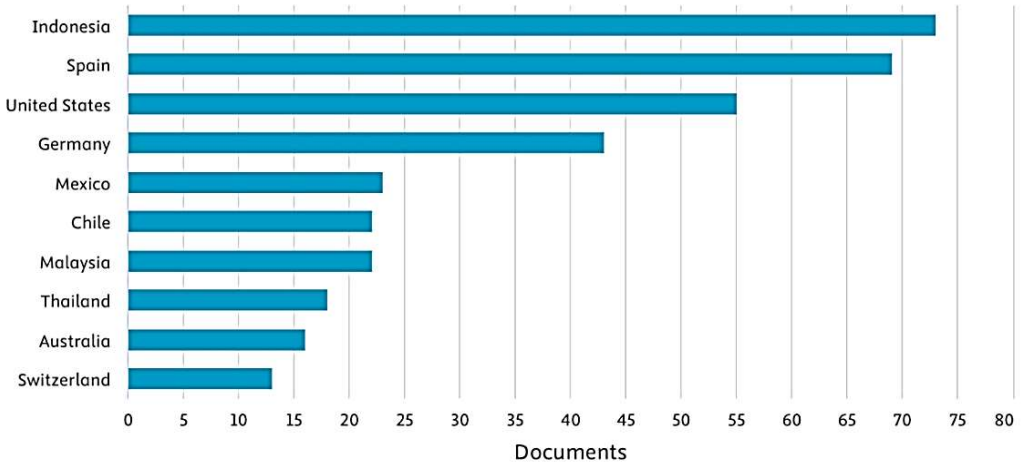

Figure 5. Document by country

Trends in Citation

Table 2 presents five academic publications that have a significant influence on the field of education and competency development, with a total of 799 citations. The article by Denham, Bassett, Zinsser, & Wyatt (2014) titled "*How preschoolers' social-emotional learning predicts their early school success: Developing theory-promoting, competency-based assessments*" with 214 citations or 26.78% of the total citations, discusses how social-emotional learning in preschool children can predict their early school success, emphasizing the importance of emotional aspects in early childhood education. Schmid, Brianza, & Petko (2020) received 176 citations (22.03%) focusing on the development of a brief assessment tool for teachers' pedagogical technology knowledge, reflecting a strong trend in the use of technology in education. Meanwhile, Atack & Rankin (2002), with 146 citations (18.27%), examines nurses' experiences in online learning, making it one of the early studies on e-learning in the healthcare field.

Kaiser et al. (2017), with 135 citations (16.90%), discussed the professional competence of mathematics teachers through

cognitive and situational approaches, providing important insights for teacher training. Meanwhile, Nehm, Beggrow, Opfer, & Ha (2012), who received 128 citations (16.02%), studied critical thinking ability about natural selection, using the ACORNS instrument as a tool to evaluate conceptual understanding of biology in a contextual manner. Overall, these five articles demonstrate significant contributions in educational theory, competence evaluation, and technology integration to support the development of effective learning. From these five top citations (see Table 2), it appears that a comprehensive title (pedagogical-professional) discussing the topic of teacher competency assessment instruments is not available. The research is more partial, seen in articles by Schmid et al. (2020) and Kaiser et al. (2017), which focus on professional competence. These two cited articles explain that the issue of professional competence is highlighted more than the other three competencies (see Table 2).

Table 2. Top five citations

No	Cites (per year)	Author (years)	Title	Publication Identity
1	214 (19.45)	Denham et al. (2014)	How preschoolers' social-emotional learning predicts their early school success: Developing theory-promoting, competency-based assessments	Infant and Child Development (2014) 23(4) 426-454
2	176 (35.20)	Schmid et al. (2020)	Developing a short assessment instrument for Technological Pedagogical Content Knowledge (TPACK.xs) and comparing the factor structure of an integrative and a transformative model	Computers & Education (2020) 157 103967
3	146 (6.35)	Atack & Rankin (2002)	A descriptive study of registered nurses' experiences with web-based learning	Journal of Advanced Nursing (2002) 40(4) 457-465
4	135 (16.88)	Kaiser et al. (2017)	Professional competencies of (prospective) mathematics teachers—cognitive versus situated approaches	Educational Studies in Mathematics (2017) 94(2) 161-182
5	128 (9.45)	Nehm et al. (2012)	Reasoning about natural selection: Diagnosing contextual competency using the ACORNS instrument	The American Biology Teacher (2012) 74(2) 92-98

Confirm Desired Performance (Qualitative Study)

The issuance of the latest government regulations and various guideline books on the teacher competency model, the government has classified five levels of competency, namely mastery of competency at the understanding level (level 1), mastery of competency at the basic level (level 2), mastery of competency at the intermediate level (level 3), mastery of competency at the proficient level (level 4), and mastery of competency at the expert level (level 5). The proficient teacher occupies the third level or mastery of competency at the intermediate

level, where the meaning of this competency mastery level is shown by the teacher's ability to evaluate and simultaneously proactively design improvements regarding knowledge of the principles of theory and practice in managing learning, professional knowledge, self-management, and relationship management in improving the quality of student-centered learning, both from the pedagogical, personality, social, and professional aspects (see Table 3).

In short, this competency level refers to the verbs "evaluate and design improvements" so that the teacher is able to evaluate and simultaneously design improvements in their competency in the four aspects (pedagogical, personality, social, and professional) to meet the learning needs and develop the students' potential (Ang et al., 2023; Asga et al., 2023; Ministry of Education, Culture, Research and Technology, 2023). Suppose the performance of the proficient teacher does not have such competency. In that case, it may be that, administratively and in terms of incentive acceptance, they are at the third competency level. However, their performance does not accurately represent this. Hence, a review is necessary because the teacher is still at the competency level of understanding (level 1) and the competency level of application (level 2). The review may include demotion of the functional position and/or conducting various training for performance updating according to the third competency level.

Table 3. Portrait of the proficient teacher competency model (intermediate level/level 3)

No	Competency	Description	Competency Indicators/Behavior	Reference Code
1	Pedagogical	Evaluate the use of strategies for creating a safe and comfortable learning environment for students, effective learning strategies, assessment, feedback, and reporting strategies that are student-centered, as well as design improvements.	a. Evaluating the implementation strategies of a safe and comfortable learning environment for students and designing its improvement. b. Evaluating effective student-centered learning and designing its improvement. c. Evaluating student-centered assessment, feedback, and reporting, and designing its improvement.	Regulation of the Director General of Teachers and Education Personnel, Ministry of Education, Culture, Research, and Technology, Number 2626/B/Hk.04.01/2023 concerning the Teacher Competency Model in Appendix II, page 2
2	Personality	Evaluate the use of strategies in managing moral, emotional, and spiritual maturity to behave following the teacher's code of ethics, self-development through reflective habits, and a student-centered	a. Evaluate behaviors that reflect moral, emotional, and spiritual maturity to behave following the teacher's code of ethics and plan their improvement. b. Evaluate the implementation of self-development through reflective habits and design its improvement.	Regulation of the Director General of Teachers and Education Personnel, Ministry of Education, Culture, Research, and Technology, Number 2626/B/Hk.04.01/2023 concerning the Teacher Competency Model in Annex II, page 2.

		orientation, complemented by the design of its improvement.	c. Evaluate habits in placing students at the center of learning and design their improvement.	
3	Social	Evaluating the use of collaboration strategies for improving learning, the involvement of parents/guardians and the community in learning, as well as engagement in professional organizations and broader networks, and designing improvements.	a. Evaluating collaboration strategies for improving the quality of learning and designing improvements. b. Evaluating the involvement of parents/guardians and the community in learning and designing more effective engagement strategies. c. Evaluating the role in professional organizations and broader networks to optimize involvement in improving the quality of student learning.	Regulation of the Director General of Teachers and Education Personnel, Ministry of Education, Culture, Research, and Technology, Number 2626/B/Hk.04.01/2023 concerning the Teacher Competency Model in Annex II, page 2.
4	Professional	Evaluate the use of knowledge of learning content and how to teach it, knowledge of learner characteristics that influence their way of learning, as well as knowledge of curriculum components and how to use them to design learning plans, and to design their improvements.	a. Evaluate the learning content and design its improvement. b. Evaluate the knowledge in determining the characteristics that will influence the learners' way of learning and plan their improvement. c. Evaluate the knowledge of curriculum components and how to use them to design learning plans and plan their improvement.	Regulation of the Director General of Teachers and Education Personnel, Ministry of Education, Culture, Research, and Technology, Number 2626/B/Hk.04.01/2023 concerning the Teacher Competency Model in Annex II, page 2.

In the aspect of pedagogical competence, the desired performance of government-employed teachers (at a minimum) is that they periodically evaluate learning strategies to create a safe and comfortable learning environment for students. This evaluation encompasses the classroom atmosphere, student-to-student relationships, and classroom management approaches that foster active student engagement. In addition, teachers autonomously review the effectiveness of student-centered learning by examining the extent to which the models, strategies, and methods used encourage participation, creativity, and independent learning. Teachers then use the results of this evaluation to design improvements through differentiated approaches and active learning, making student learning more joyful, mindful, and meaningful.

Moreover, teachers also evaluate the assessment process, feedback, and learning outcome reporting to ensure that all these truly support student development and graduate profiles rather than merely measuring final results. By providing corrective and constructive feedback, as well as communicative reporting, teachers strive to make the learning process more meaningful. All these steps are taken to create an optimal and sustainable learning experience for students.

In terms of personal competence, the government also suggests that teachers periodically evaluate their behavior to ensure moral, emotional, and spiritual maturity, as outlined in the teacher's code of ethics. It is important to maintain the teacher's integrity and exemplary behavior when interacting with students, colleagues, and parents, both inside and outside the school environment. Teachers are also expected to act autonomously and consistently in reflecting on their competence in meeting students' learning needs as part of professional development. Routine reflection helps teachers identify strengths and weaknesses in their teaching practices and promotes continuous improvement aligned with students' learning needs. In addition, teachers are also able to evaluate the habit of placing students at the center of learning—whether the approaches used have provided space for them to be active, independent, and grow according to their potential, or otherwise. If deficiencies are found in these aspects, teachers make proactive decisions in designing improvement steps to ensure the teaching and learning process runs in a more meaningful, fair, and student-oriented manner while also reflecting ethical values and teacher professionalism.

In the aspect of social competence, ideally, a proficient teacher periodically evaluates collaboration strategies with colleagues, other school stakeholders, parents, and the community in order to improve the quality of learning. Effective collaboration enables the exchange of ideas, joint problem-solving, and the enhancement of teaching practices. If obstacles are encountered in communication or coordination, the teacher redesigns and implements improved cooperation strategies that are more innovative and productive. In addition, the teacher needs to evaluate the extent to which they involve parents/guardians and the community, as well as professional communities, in supporting the learning process and enhancing the quality of learning. Meaningful involvement can strengthen students' learning support at home and in their environment. If involvement is still limited, the teacher needs to develop new, more participatory approaches, including evaluating the teacher's role in professional organizations and teacher networks. Active involvement in these communities is crucial for developing competencies and enhancing the quality of teaching in a manner that is more aligned with the progress of the times. If the teacher's role is not yet optimal, they also autonomously plan to increase participation in order to contribute more to improving the quality of education collaboratively.

In the aspect of professional competence, the teacher periodically evaluates the learning content they use, ensuring its alignment with the curriculum as well as its relevance to students' learning development needs and context. If the material is too difficult, unengaging, outdated, or lacks contextual relevance, the teacher designs improvements by simplifying concepts, using more varied learning resources, and connecting them to real life. At the same time, the teacher also assesses their understanding of student characteristics, such as learning styles, backgrounds, and prior knowledge, as these greatly influence how students absorb information and determine the learning model and the design of learning outcome assessment instruments. If this understanding is not yet in-depth, the teacher plans improvements through observation, dialogue, and reflection. Furthermore, the teacher evaluates their knowledge of curriculum

components, including learning objectives and outcomes. If not yet optimal in designing curriculum-based learning and graduate profiles, teachers develop improvement strategies, such as participating in training, engaging in discussions with colleagues and experts, and refining planning through classroom action research to make learning more focused and meaningful.

Identify the Causes of Performance Gaps

VOSviewer Analysis (Quantitative Study)

The trend of keywords (co-occurrence) was analyzed using the unit of analysis of all keywords with the full counting method, where five occurrences of a keyword were required, resulting in 107 keywords meeting the threshold out of 2097 keywords. In total, the 107 keywords (items) successfully formed five clusters, 2115 links, and a total link strength of 5746. More specifically, the ten keywords with the highest occurrences consecutively are: (1) human = 58, with total link strength = 674, (2) assessment = 54, with total link strength = 184, (3) article = 46, with total link strength = 542, (4) teaching = 45, with total link strength = 352, (5) teacher = 41, with total link strength = 435, (6) humans = 38, with total link strength = 497, (7) students = 38, with total link strength = 152, (8) higher education = 37, with total link strength = 84, (9) education = 33, with total link strength = 314, and (10) female = 28, with total link strength = 371.

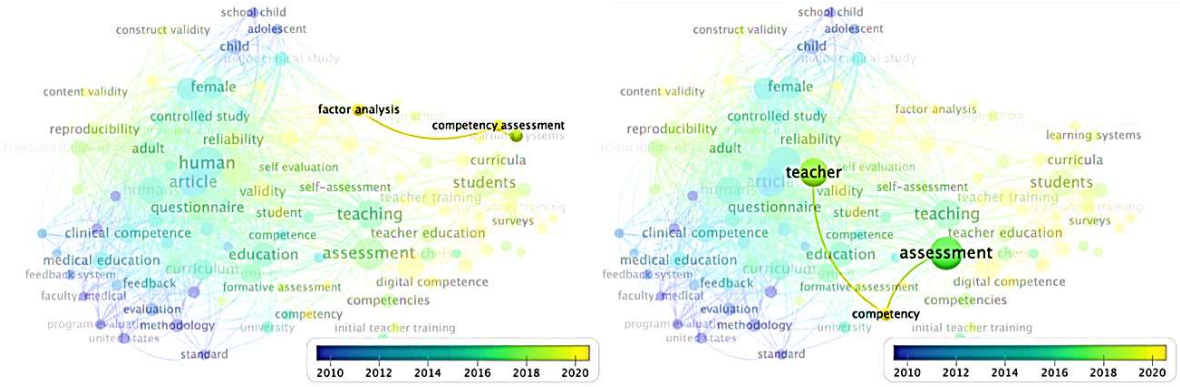

Figure 6. Overlay visualization of keywords (co-occurrence) trends

Further analysis also found that keywords relevant to the research focus, such as "competency assessment," had only six occurrences, with a total link strength of 12, and built a network only with the keyword "factor analysis." Similarly, the keyword "competency" had only eight occurrences, with a total link strength of 60, and built a network only with the keywords "assessment" and "teacher." Moreover, as shown in the overlay visualization in Figure 6, the publications captured with related topics also fall within the 2010–2020 range. This visualization demonstrates that research on the development of assessment instruments for proficient teacher competency, based on the latest government regulation published in 2023, is not only limited but has also never been conducted, making this research topic highly potential for future studies.

Next, the trends in the title and abstract fields were also analyzed using the choose counting method, along with the full counting method, with a minimum number of occurrences set at 10, resulting in 416 terms meeting the threshold out of 11,069. For choosing the number of terms, by default, 60% of the most relevant terms were set, so the number of terms to be selected = 250. Overall, the 250 terms that the

successfully formed 8 clusters, comprising 11,369 links and a total link strength of 68,003. More specifically, the ten terms with the highest occurrences in order are: (1) model = 263, with relevance = 0.38, (2) item = 167, relevance = 0.35, (3) validity = 162, with relevance = 0.38, (4) child = 152, wit relevance = 1.00, (5) reliabilty = 130, with relevance = 0.26, (6) factor = 121, with relevance = 1.24, (7) literacy = 103, with relevance = 0.69, (8) area = 101, with relevance = 0.47, (9) question = 98, with relevance = 0.54, and (10) score = 86, with relevance = 0.40.

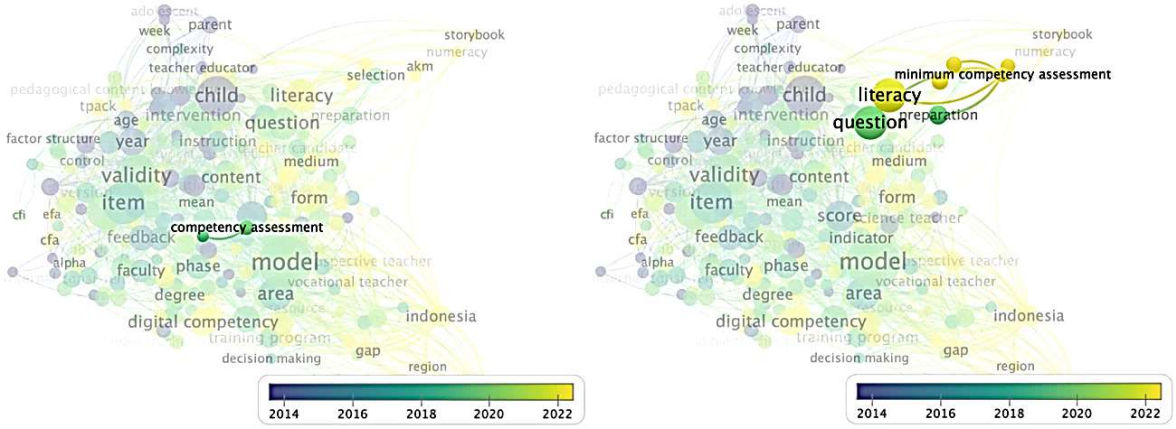

Figure 7. Overlay visualization of title and abstract trends

Further analysis also found that terms relevant to the research focus, such as "competency assessment," have only 17 occurrences, with a relevance score of 0.72, and only form one network, namely with the term "e-portfolio." Likewise, the term "minimum competency assessment" has only 16 occurrences, with a relevance score of 2.57, and only builds networks with the terms "question," "literacy," "preparation," "pandemic," and "COVID." Moreover, Figure 7 also shows that the publications captured under related topics span the years 2010-2022. Once again, this fact demonstrates that the research topic of developing instruments to assess the competencies of proficient teachers, in accordance with the latest 2023 government regulations, is highly promising for future research. The reason is that this topic is not only limited, but also no scientific publications have been found in articles, conference papers, or book chapters discussing this topic.

Content Analysis (Qualitative Study)

In this section, the author selects 457 documents for five research publications focusing on teacher competency assessment instruments, particularly in the Indonesian context, considering reviewed regulations align with the needs and recommendations of the Indonesian government regarding the competency level of proficient teachers.

It begins with the research findings of Mariani & Ismail (2015), which reveal that three main elements significantly influence teacher competence. First, professional knowledge, which is the teacher's mastery of relevant material, methods, and learning approaches. Second, functional skills, including the teacher's ability to apply that knowledge effectively in the learning process. Third, a creative attitude, namely an open, innovative, and flexible attitude in designing and delivering material to make it enjoyable and easy for students to understand. These three aspects support each other in building

meaningful and inspiring mathematics learning. The subsequent research by Sukardi (2019) discusses the development of a teacher performance assessment instrument based on professional competence. The instrument reflects three leading indicators. First, mastery of material, structure, concepts, and scientific thinking patterns in the subject taught. Second, mastery of competency standards and basic competencies that serve as references in the learning process. Third, the use of information and communication technology (ICT) in supporting learning and teacher professionalism.

Third, Eliyawati, Widodo, Kaniawati, & Fujii (2023) developed an instrument that can measure the competence of science teachers in teaching Education for Sustainable Development (ESD) in schools. This instrument is declared feasible and effective for identifying the readiness of science teachers to integrate sustainability concepts into learning. There are seven leading indicators in this instrument, namely: (1) content knowledge, (2) content pedagogy, (3) inquiry, (4) professional practice, (5) assessment and evaluation, (6) professional development, and (7) attitude. Furthermore, the research by Usman et al. (2024) successfully identified ten main competencies of prospective elementary school teachers in Indonesia to support professionalism and work effectiveness. These competencies include: (1) building positive working relationships, (2) the ability to guide students, (3) continuous learning, (4) making appropriate decisions, (5) ethical maturity in action, (6) efficient work management, (7) understanding the mission and goals of education, (8) resilience in facing challenges, (9) convincing communication, and (10) the ability to appreciate differences. These competencies reflect important personal, social, and professional qualities for prospective teachers.

Lastly, the research by Lukitasari et al. (2025) successfully developed the STEM-DT instrument. The first dimension is the identification and development of learning needs, which includes the teacher's ability to recognize student needs and design appropriate learning. The second dimension is innovation and collaboration in learning, namely the extent to which teachers are able to create creative strategies and collaborate with various parties to improve learning quality. The third dimension is the implementation and evaluation of integrated learning, which assesses the teacher's ability to apply and evaluate cross-disciplinary learning comprehensively. Referring to the various research findings above, it is recorded that the indicators of teacher competence development reflect diverse complementary dimensions aimed at creating an effective, innovative, and sustainable learning process. Some important indicators that consistently appear are: (1) mastery of content and pedagogy, (2) ability to integrate technology and scientific approaches, (3) ability to assess and evaluate learning, (4) continuous professional development, (5) creative, ethical, and adaptive attitudes, and (6) ability to establish working relationships, effective communication, and appreciate differences.

Then, referring to the results of both studies (quantitative and qualitative study data), what are the opportunities for future research? Although most indicators represent the dimensions of proficient teacher competencies, a gap exists in aspects of technology integration and a scientific approach to learning that are not explicitly addressed in the existing indicators. It becomes an important note for the development of future instruments to be more contextual with the demands of the times, students' needs, and also government regulations. We also highlight that the teacher competency assessment instruments in Indonesia are not yet up to date with the latest regulations, even though some previous research results have accommodated various teacher competency indicators, including competency assessment instruments (Saleh et al., 2024). Other instruments still differentiate between each

competency, such as the Teaching Competency Assessment Instrument (Lumba et al., 2021) and the Social Competency Assessment Instrument (Rusijono et al., 2020).

Indicators and sub-indicators for the construction of future instruments need to refer to the latest model of teacher competency regulations, particularly at the functional level of proficient teachers (Ang et al., 2023; Asga et al., 2023; Ministry of Education, Culture, Research and Technology, 2023) namely, teachers who proactively evaluate and design improvements to their competencies continuously to meet the ever-changing learning needs of students that researchers or instrument developers have previously overlooked, for example, in pedagogical competencies, including assessment, feedback, and student-centered reporting. Personality competency includes self-development through reflective habits. Social competency includes involvement in professional organizations and wider networks for learning improvement. Fourth, professional competency includes the curriculum and how to use it (Ang et al., 2023; Asga et al., 2023; Ministry of Education, Culture, Research and Technology, 2023).

We also discuss pedagogical competence, a specialized skill of teachers responsible for applying pedagogy in their classrooms. For this, teachers must master values and concepts, theoretical knowledge and curriculum, interaction, and teaching skills (Ranta et al., 2023). They apply effective teaching methods and manage the learning process (Syahrial, Asrial, Maison, Mukminin, & Kurniawan, 2020) from the planning stage to its evaluation (Syahruddin et al., 2013). Teachers with good pedagogical competence must be able to evaluate the use of strategies for creating a safe and comfortable learning environment for students, effective learning strategies, assessment strategies, feedback, and student-centered reporting, as well as design improvements (Ang et al., 2023; Asga et al., 2023; Ministry of Education, Culture, Research and Technology, 2023) so that the improvement of teaching quality and student learning achievement becomes a necessity (König et al., 2021). Most importantly, the students' learning outcomes can help them survive in academic and non-academic life in the multicultural society of Indonesia and globally.

Continuing to personality competence, personality theory notes that an individual's character influences how they interpret and react to their environment (Hussain, Chenmei, Saeed, Hassan, & Chiragh, 2024). While orchestrating their classroom, teachers must ensure that they have an upbeat personality when interacting with their students. They show resilient, mature, wise, and authoritative personalities and become role models for their students (Sriekaningsih, Sarmauli, & Yovania Karubaba, 2019), sympathetic, respectful, caring, and sincerely develop their students' potential (Kok & Meyer, 2018; Maunes & Apostol, 2024). Furthermore, teachers must also be able to evaluate the use of strategies in managing moral, emotional, and spiritual maturity to behave according to the teacher's code of ethics, self-development through reflective habits, and student-centered orientation, accompanied by the design of improvements (Ang et al., 2023; Asga et al., 2023; Ministry of Education, Culture, Research and Technology, 2023).

Proficient teachers also need to pay attention to and develop their social competence, as it shapes their personal capacity, which helps them adapt in the workplace (Lozano-Peña, Sáez-Delgado, López-Angulo, & Mella-Norambuena, 2021; Seeber & Wittmann, 2017). Social competence is fundamental because the teacher's job is to provide learning guidance, which is essentially an interactive social process. Teachers create social situations that affirm the constructive dynamics of the classroom by maintaining good interaction and communication with students, colleagues, educational staff, students' parents, and the community to develop a work network for improving the quality of

education services (Braun & Hooper, 2024; Kamal, Tati, & Irfan, 2021; Rusijono et al., 2020; Siruwa, Hamid, & Lukman, 2023; Tynjälä, Virtanen, Klemola, Kostiainen, & Rasku-Puttonen, 2016). They must also be able to evaluate the use of collaborative strategies for learning improvement, parental/community engagement in learning, as well as involvement in professional organizations and broader networks, and design improvements (Ang et al., 2023; Asga et al., 2023; Ministry of Education, Culture, Research and Technology, 2023).

We close the discussion on professional competence, which confirms that teachers as a profession must perform student learning service tasks professionally (Berlian, 2022). Teachers not only evaluate their students' performance but are also able to evaluate the use of content knowledge and ways of teaching it, knowledge of student characteristics that affect their learning, as well as knowledge of curriculum components and how to use them to design learning and improvements (Ang et al., 2023; Asga et al., 2023; Ministry of Education, Culture, Research and Technology, 2023). Such teacher performanc is helpful for students' academic development as well as improving the quality of teaching and their professional development (Dignath & Karlen, 2024). They proactively and continuously develop content knowledge and practical skills that support their teaching competence (Ní Ríordáin, Paolucci, & Lyons, 2019).

CONCLUSION

The results of the overlay visualization analysis indicate that there are no scientific publications discussing the development of assessment instruments for the competencies of proficient teachers in accordance with the latest government regulations of 2023, within the period from 2010 to 2020. This fact indicates that the topic is not only limited but truly untouched by previous research. Therefore, this topic has urgency and great potential for further exploration in future studies. Furthermore, in the content analysis, the existing instruments have not fully aligned with the latest competency regulations at the proficient teacher competency level and tend to separate each competency dimension, such as pedagogical, social, or personality, separately. This study presents a significant contribution by developing an instrument based on the latest regulations and covering four main competencies: pedagogic, personality, social, and professional. Pedagogic competency requires teachers to plan, implement, evaluate, and improve learning effectively.

Personality competency requires teachers to demonstrate resilience, maturity, and ethics and serve as moral role models for students. Social competency emphasizes the importance of interaction, collaboration, and constructive communication with various stakeholders, both inside and outside the school. Meanwhile, professional competency focuses on mastering teaching materials, understanding student characteristics, and the ability to design and evaluate the learning process based on the applicable curriculum. With this approach, the research is not only academically relevant but also provides a practical foundation for improving the quality of teachers in Indonesia. The development of this instrument allows the assessment of teacher competencies to be conducted more comprehensively, following the demands of current teacher professionalism. Therefore, this study can become an important reference in national education quality improvement policies, especially at the proficient teacher level who serve as the foundation of quality learning in schools that emphasize proactive work attitudes and periodically evaluate as well as design improvements in their competencies from pedagogic, personality, social, and professional aspects to enhance student-centered learning quality.

Although this study makes an important contribution to the development of a competency

assessment instrument for proficient teachers based on the latest 2023 regulations, several limitations warrant consideration. First, a visualization overlay analysis reveals no previous scientific publications explicitly addressing this topic between 2010 and 2020. This lack of prior references suggests that this study is built on a limited literature base, leaving little room for comparison or conceptual development. Second, the instrument developed has not been extensively tested across various educational contexts, encompassing geographic backgrounds, school levels, and varying teacher experience. This limits the generalizability of the findings to broader practice in the field. Third, the study's narrow focus on the 2023 government regulations prevents it from exploring the possibility of integration with other relevant educational policies that could potentially support teacher competency strengthening. Finally, although an integrative approach to the four competency dimensions has been taken, longitudinal testing and practical implementation are still needed to ensure the instrument's effectiveness and sustainability in supporting the overall quality of competency-based learning.

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