



Level of Early Childhood Education (PAUD) Teachers' Knowledge on Developing Holistic Assessment Rubrics Using the Rasch Model



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Abstrak

Penelitian ini dilakukan untuk mengetahui tingkat pengetahuan guru PAUD tentang penyusunan rubrik penilaian holistik Se-Kecamatan Arut Selatan. Tujuan dari penelitian ini adalah untuk menganalisis tingkat pengetahuan guru PAUD tentang penyusunan rubrik penilaian holistik Se-Kecamatan Arut Selatan. Penelitian ini merupakan penelitian deskriptif kuantitatif. Metode yang digunakan adalah metode survei. Subjek penelitian ini adalah guru PAUD se-Kecamatan Arut Selatan yang berjumlah 65 orang. Instrumen dalam penelitian ini menggunakan tes pilihan benar-salah. Teknik analisis data menggunakan analisis deskriptif kuantitatif yang disajikan dalam bentuk presentase dan dianalisis dengan menggunakan model Rasch. Model Rasch menggunakan prinsip probabilitas pada setiap pilihan yang tersedia yang pada teori tes klasik lebih diutamakan pada total skor hasil dari ujian atau kuesioner. Hasil penelitian menunjukkan bahwa tingkat pengetahuan guru PAUD tentang penyusunan rubrik penilaian holistik Se-Kecamatan Arut Selatan berada pada kategori "rendah" sebesar 47.7% (31 guru), "Sedang" sebesar 38.4% (25 guru), dan "tinggi" sebesar 13.9% (9 guru). Berdasarkan nilai rata-rata, yaitu 20.78, tingkat pengetahuan guru PAUD tentang penyusunan rubrik penilaian holistik Se-Kecamatan Arut Selatan dalam kategori "sedang".

This research addresses the level of knowledge of PAUD teachers regarding the preparation of holistic assessment rubrics in South Arut District. The purpose of this study was to analyze the level of knowledge among PAUD teachers about developing holistic assessment rubrics in South Arut District. This study is a quantitative descriptive research. The method used is a survey. The subjects of this study were 65 PAUD teachers from South Arut District. The instrument used in this study was a true-false choice test. Data analysis was performed using quantitative descriptive analysis, presented in percentage form and analyzed with the Rasch model. The Rasch model employs probability principles for each available option, whereas classical test theory focuses on the total score from exams or questionnaires. The results showed that the level of knowledge of PAUD teachers regarding the preparation of holistic assessment

rubrics in South Arut District was categorized as "low" for 47.7% (31 teachers), "medium" for 38.4% (25 teachers), and "high" for 13.9% (9 teachers). Based on the average score of 20.78, the level of knowledge among PAUD teachers about the preparation of holistic assessment rubrics in South Arut District falls into the "medium" category.



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INTRODUCTION

Knowledge is a fundamental aspect of the advancement of the world. The presence of knowledge in the field of education is a crucial factor in the progress of a nation. Education plays a vital role in shaping high-quality human resources, and thus, the quality of education must continually be improved and updated in line with developments. High-quality education will produce generations with exceptional talents.

In terms of improving educational quality, enhancing the quality of early childhood education is essential for developing abundant human resources. One way to improve early childhood education is by increasing teachers' knowledge. Knowledge encompasses various phenomena encountered and acquired through sensory observation (Untariana et al., 2019).

Good assessment is always accompanied by rubrics. Teachers use rubrics as a reference or guide for evaluating students. Assessment rubrics are designed to provide students with a clear understanding of what is being assessed in their studies. Rubrics can also be used to motivate students to engage more actively in their learning. The benefits of using rubrics for teachers include preventing misunderstandings in assessment because evaluations are based on existing rubrics, and these rubrics can be used to enhance student performance.

A rubric is an alternative assessment tool used to measure and evaluate students comprehensively. It is considered comprehensive because a student's ability or performance is observed not only at the end of the process but also throughout the process. Rubrics also serve as a guide and assessment tool. According to Eka et al. (2017), a rubric is an assessment tool that contains a set of criteria or elements to be considered. Based on various opinions about rubrics, they can be defined as assessment guidelines that outline the standards required by teachers when evaluating or assessing student work.

Assessment in education involves collecting information periodically, continuously, and comprehensively about the process and results of students' growth and development through learning activities (Ferris & O'Flynn, 2015). The function of assessment is to measure how well students achieve learning objectives. Assessment also serves to check students' abilities, identify weaknesses in the learning process, and determine students' mastery of the established competencies, which is then used for decision-making (Rachmawati et al., 2021).

Assessment is always related to learning objectives. This implies that different learning objectives require different types of assessments. This is consistent with Puckett & Black, as cited by Subali (2013), who argue that assessment should align with learning goals and curriculum content. Alignment in assessment means that what is measured should correspond with the intended learning outcomes. Benjamin S. Bloom proposed that teaching objectives are classified into three domains: cognitive, affective, and psychomotor. Accordingly, if the goal is to measure cognitive abilities, assessments should target the cognitive domain, and similarly for the psychomotor and affective domains.

According to Sani (2019), assessment and evaluation are efforts to gather data that are then processed for decision-making in educational programs. In teaching and learning activities, teachers assess by collecting facts and learning documents from students to improve lesson planning. Therefore, assessment activities require varied information from each student or group of students. Accurate assessment can provide a reflection of the learning experiences encountered by students.

Assessment or evaluation involves various activities to gather qualitative and quantitative information at the beginning, during, or at the end of learning (Rosnaeni, 2021). Assessment is a method of collecting information to conclude measurement results through systematic analysis, adjusted to each specific criterion (Dariyanto, 2010). Furthermore, assessment is defined as activities designed to measure the level of students' achievement in learning, obtained through the application of a specific teaching program over a relatively short period (Sudaryono, 2012).

Assessment has three main objectives: Assessment of learning, Assessment for learning, and Assessment as learning (Purnomo, 2014). In Indonesia, the commonly used assessment is Assessment for learning, which measures students' performance without aiming at improving the learning process (Purnomo, 2014). Thus, assessment is a method to gather both qualitative and quantitative information conducted at the beginning, during, and at the end of learning to obtain measurement results adjusted to specific criteria.

The primary goal of using assessment in learning is to assist teachers and students in making professional decisions to improve the learning process (Ramdiah et al., 2019). In general, the purpose of assessment is to recognize students' learning achievements and improve teaching programs and activities (Hamdi et al., 2022).

The development of assessment tools is closely related to creating assessment rubrics. This can affect the results obtained if the developed assessment tools are successfully implemented. Valid and well-standardized assessment rubrics can provide better understanding for students about what will be assessed. When applied in the classroom, they can yield better results from the learning process. An assessment rubric that is created by establishing good standards includes essential elements of the aspects to be evaluated. If the rubric meets high standards, it can organize the learning process and motivate students to perform their best in the learning activities. An assessment rubric can provide students with clear performance targets.

Rubrics are widely used in early childhood, elementary, secondary, and post-secondary education. They emerged as part of the response to research in the 1980s indicating that students were better at recalling facts and concepts than applying them, with interest in assessment (Tierney & Simon, 2004) and standards-based reform (Brookhart, 2018).

Educators tend to define the term "rubric" in slightly different ways. The commonly used definition is a document that articulates expectations for a task through a list of criteria or what is being measured, and describes levels of quality from excellent to poor (Arter & McTighe, 2001; Goodrich Andrade, 2000).

The relationship between rubrics and learning has been explored by several researchers, with general findings indicating higher performance and deeper learning by students who have rubrics to guide their work. Rubrics are more than just tools used to support assessors in making summative judgments. Teachers also use rubrics as a means to provide feedback (Nordrum et al., 2013). It is important to note that teachers are not a homogeneous group, and in modern school grading, this task is often entrusted to a group of para-academic specialists (Bose & Rengel, 2009). Students can use rubrics in various ways, including self-assessment and peer assessment, and in examining assignment requirements (Andrade & Boulay, 2003; Panadero & Romero, 2014). Students use sample rubrics to plan their responses to assignments, for formative peer assessment in class, and for self-assessment. Teachers use sample rubrics to provide assessment information and summative feedback.

The use of rubrics to evaluate student writing arose from widespread dissatisfaction among teachers and administrators with traditional essay assessment strategies. In today's high-stakes educational assessment environment, many educators regularly and confidently use rubrics as a way to evaluate student work. This indicates that rubrics are highly valued tools that enhance reliability and validity in assessment. However, it should be noted that simply implementing rubrics may not guarantee effective assessment (Yudha, 2020).

Holistic rubrics are assessment guidelines that evaluate based on an overall impression or combination of all criteria (Ristekdikti, 2015). Overall assessment criteria are often referred to as global assessment criteria. Holistic rubrics are those where teachers provide a single score (typically from 1 to 4 or 1 to 6) based on the overall results of students' skills, attitudes, or behavioral responses without separately evaluating each component. The assessment performed by teachers matches the entire set of skills, attitudes, or behavioral responses to one description on a scale (Herman & Mancevice, 2018).

The main advantage of holistic rubrics is that they allow teachers to quickly develop the rubric. Holistic rubrics produce assessments with high reliability because the scores received by students reflect criteria that are easy to interpret. The drawback is that holistic rubrics do not provide feedback to students. This is because overall assessment criteria do not reveal the strengths and weaknesses of specific performance responses, attitudes, or behaviors (Brookhart, 2018b).

Rubrics are one of the tools that can be used in early childhood education to evaluate student performance not only at the end but also during the process. Based on observations and interviews, it appears that many early childhood education teachers in South Arut District still do not fully understand assessment rubrics and are not fully prepared to formulate them. Most teachers only assess student performance at the end of the learning process, without considering the ongoing process of learning. Teachers should have effective assessment tools that can be applied according to the desired objectives. To avoid subjectivity, teachers need to be careful in assessing student performance from the start of the learning process.

METHOD

This study is a quantitative descriptive research. The method used is the survey method, and the data collection technique involves a true-false choice test. The purpose of this research is to determine the level of knowledge of early childhood education (PAUD) teachers in South Arut District regarding the preparation of overall PAUD assessment criteria.

The population for this research consists of all teachers in South Arut District, totaling 276 individuals. The sample considered appropriate for this study includes 10 institutions supported by the researcher, comprising 65 teachers.

The data obtained are ratio data designed for analysis using the Rasch model. The Rasch model employs the principle of probability for each available option, which in classical test theory is more focused on the total score from exams or questionnaires (Sumintono & Widhiarso, 2015).

One of the advantages of Rasch analysis with Winsteps is the presence of a map that depicts the distribution of subject abilities and the difficulty levels of items on the same scale. This map, known as the Wright map, is essentially a person-item map. The person-item map generated from Winsteps for dichotomous data is also in a text file format (*.txt), which can be modified as needed. For example, to examine the differences in abilities between individuals, the map can be manually adjusted without changing its logit location.

The information provided by the Wright map can assist researchers in evaluating both respondents and item statements. Researchers can identify individual respondent abilities and analyze the quality of statements tested with teachers. Additionally, because the logit scale has equal intervals on the Wright map, the information obtained is precise. For instance, researchers can determine the number of items that teachers could not answer correctly, allowing for improvements to those items.

RESULTS AND DISCUSSION

The analysis in this study utilized descriptive statistics with a percentage descriptive analysis technique, involving categorization into three levels: high, medium, and low. The description of the research results can be seen in the table below.

Table 1. Distribution of Teacher Ability Frequencies

No	Interval	Category	Frequency	Frequency
1	$x \leq 18.5$	Low	31	47.7
2	$18.5 \leq x \leq 27$	Medium	25	38.4
3	$x > 27$	High	9	13.9
Total			65	100

Based on Table 1, it can be seen that 9 teachers, or 13.9% of PAUD teachers in South Arut District, have a high level of ability in understanding the preparation of rubrics. Additionally, 25 PAUD teachers, or 38.4%, have a medium level of ability, while 31 PAUD teachers, or 47.7%, have a low level of ability in preparing rubrics. The average (mean) score of the PAUD teachers in South Arut District is 20.78, which falls into the medium category.

In analyzing teachers' ability to prepare holistic assessment rubrics, the assessment can identify teachers with high levels of ability, those with different response patterns (careless or inattentive teachers), and those identified as collaborating (cheating). Information obtained from the Winsteps program includes:

1) Person Measure

The Person Measure table shows individual teacher ability with logit information for each teacher. A high logit value indicates a high level of knowledge about rubric preparation. This is reflected in the total score column, which represents the number of correct answers. The entry number column lists the teachers in sequence, with their codes displayed in the rightmost column (person), starting with the highest ability, which is teacher number 28 with code GR028.

The highest logit value indicates the highest ability in rubric preparation knowledge. The respondent (teacher) with code GR028 has a logit value of -0.40. This is also reflected in the total score column, showing 40 out of 40 correct answers given. Conversely, teacher code GR024 has a logit value of -5.62, indicating a low level of ability in rubric preparation. This is supported by the total score of only 3 correct answers out of 40 questions.

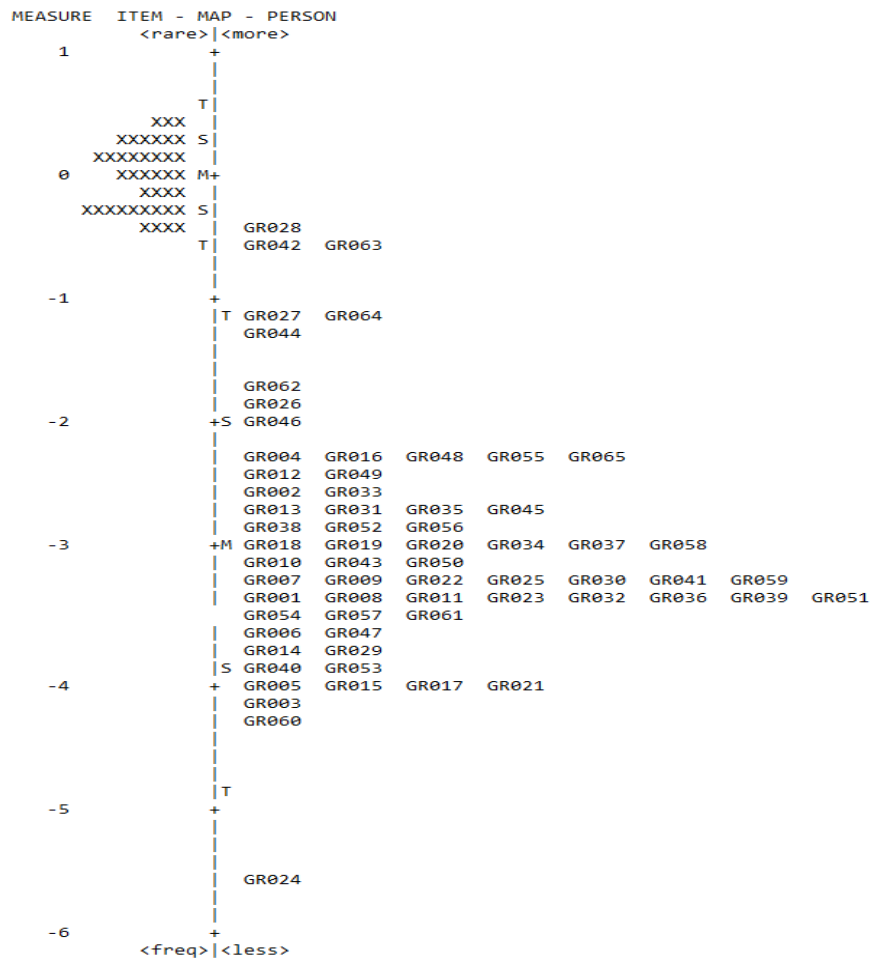
Table 2. Person Measure

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S. E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PTMEASUR-CORR.	AL-EXP.	EXACT OBS%	MATCH EXP%	PERSON
28	40	40	- .40	.26	.03	-1.55	.03	-1.26	.00	.14	100.0	92.1	GR028
42	38	40	- .58	.34	.25	-.34	.27	-.45	-.16	.11	95.0	91.7	GR042
63	38	40	- .58	.34	3.75	1.66	5.27	2.21	.15	.11	80.0	91.7	GR063
27	35	40	-1.12	.46	.91	.11	.90	.13	.10	.09	87.5	87.3	GR027
64	35	40	-1.12	.46	.93	.14	.95	.20	-.03	.09	87.5	87.3	GR064
44	34	40	-1.32	.44	1.00	.16	1.03	.24	-.03	.10	85.0	85.0	GR044
62	32	40	-1.67	.40	1.02	.18	1.04	.23	.00	.11	80.0	80.0	GR062
26	31	40	-1.82	.38	1.06	.35	1.13	.59	-.17	.11	77.5	77.5	GR026
46	30	40	-1.96	.37	1.08	.47	1.16	.80	-.23	.12	75.0	75.1	GR046
4	27	40	-2.33	.34	1.00	.02	.99	-.03	.15	.13	67.5	67.6	GR004
16	27	40	-2.33	.34	.93	-.58	.89	-.80	.43	.13	67.5	67.6	GR016
48	27	40	-2.33	.34	1.03	.31	1.04	.37	.00	.13	67.5	67.6	GR048
55	27	40	-2.33	.34	1.09	.73	1.11	.86	-.20	.13	67.5	67.6	GR055
65	27	40	-2.33	.34	1.06	.51	1.07	.53	-.09	.13	67.5	67.6	GR065
12	26	40	-2.45	.33	1.00	.02	1.01	.14	.13	.13	65.0	65.1	GR012
49	26	40	-2.45	.33	1.00	.04	1.00	.05	.13	.13	65.0	65.1	GR049
2	25	40	-2.56	.33	.96	-.47	.94	-.57	.31	.13	62.5	62.6	GR002
33	25	40	-2.56	.33	.99	-.08	.98	-.13	.17	.13	62.5	62.6	GR033
35	24	40	-2.66	.33	.93	-.94	.92	-.93	.40	.13	65.0	60.2	GR035
45	24	40	-2.66	.33	1.02	.32	1.02	.22	.06	.13	55.0	60.2	GR045
13	23	40	-2.77	.32	.95	-.71	.95	-.77	.31	.13	60.0	58.2	GR013
31	23	40	-2.77	.32	1.08	1.22	1.08	1.25	-.15	.13	50.0	58.2	GR031
38	22	40	-2.87	.32	1.03	.50	1.03	.54	.04	.14	62.5	56.8	GR038
52	22	40	-2.87	.32	1.01	.11	1.01	.14	.12	.14	57.5	56.8	GR052
56	22	40	-2.87	.32	1.02	.31	1.01	.25	.08	.14	52.5	56.8	GR056
18	21	40	-2.97	.32	1.01	.13	1.01	.18	.11	.14	60.0	56.1	GR018
19	21	40	-2.97	.32	1.02	.49	1.02	.48	.06	.14	50.0	56.1	GR019
20	21	40	-2.97	.32	.99	-.20	.99	-.21	.17	.14	55.0	56.1	GR020
34	21	40	-2.97	.32	.90	-2.28	.90	-2.26	.50	.14	75.0	56.1	GR034
37	21	40	-2.97	.32	1.09	1.85	1.09	1.80	-.17	.14	35.0	56.1	GR037
58	21	40	-2.97	.32	.94	-1.23	.94	-1.24	.34	.14	65.0	56.1	GR058
10	20	40	-3.08	.32	1.03	.75	1.03	.76	.02	.14	50.0	55.9	GR010
43	19	40	-3.18	.32	.93	-1.63	.93	-1.59	.40	.14	75.0	56.2	GR043
50	19	40	-3.18	.32	.94	-1.30	.94	-1.32	.35	.14	65.0	56.2	GR050
7	18	40	-3.28	.32	1.07	1.37	1.07	1.34	-.13	.14	42.5	56.9	GR007
9	18	40	-3.28	.32	.90	-1.94	.90	-1.86	.49	.14	77.5	56.9	GR009
22	18	40	-3.28	.32	.94	-1.23	.93	-1.24	.37	.14	62.5	56.9	GR022
25	18	40	-3.28	.32	1.03	.65	1.03	.63	.01	.14	47.5	56.9	GR025
30	18	40	-3.28	.32	.85	-2.89	.85	-2.88	.66	.14	82.5	56.9	GR030
41	18	40	-3.28	.32	.97	-.50	.97	-.48	.23	.14	57.5	56.9	GR041
59	18	40	-3.28	.32	1.06	1.18	1.06	1.18	-.09	.14	52.5	56.9	GR059
32	17	40	-3.38	.32	.96	-.56	.96	-.62	.27	.13	57.5	58.2	GR032
51	17	40	-3.38	.32	.94	-1.02	.93	-1.00	.36	.13	62.5	58.2	GR051
54	17	40	-3.38	.32	.98	-.34	.98	-.29	.21	.13	62.5	58.2	GR054
61	17	40	-3.38	.32	.98	-.34	.97	-.43	.22	.13	57.5	58.2	GR061
1	16	40	-3.49	.33	1.01	.13	1.02	.31	-.09	.13	67.5	60.2	GR001
8	16	40	-3.49	.33	1.09	1.20	1.09	1.11	-.19	.13	52.5	60.2	GR008
11	16	40	-3.49	.33	1.03	.46	1.04	.50	.01	.13	57.5	60.2	GR011
23	16	40	-3.49	.33	1.01	.19	1.02	.25	.08	.13	62.5	60.2	GR023
36	16	40	-3.49	.33	1.04	.56	1.04	.56	-.02	.13	57.5	60.2	GR036
39	16	40	-3.49	.33	.96	-.56	.95	-.58	.29	.13	62.5	60.2	GR039
57	16	40	-3.49	.33	1.04	.52	1.04	.51	.00	.13	57.5	60.2	GR057
6	15	40	-3.60	.33	.93	-.79	.92	-.85	.40	.13	62.5	62.4	GR006
47	15	40	-3.60	.33	1.09	1.04	1.10	1.07	-.21	.13	62.5	62.4	GR047
14	14	40	-3.71	.33	1.03	.34	1.04	.43	.00	.13	65.0	64.9	GR014
29	14	40	-3.71	.33	.97	-.25	.96	-.32	.24	.13	65.0	64.9	GR029
40	13	40	-3.82	.34	1.00	.05	1.00	.04	.12	.13	67.5	67.4	GR040
53	13	40	-3.82	.34	.92	-.61	.91	-.70	.41	.13	67.5	67.4	GR053
17	12	40	-3.94	.35	.92	-.52	.89	-.69	.42	.13	70.0	69.9	GR017
5	11	40	-4.06	.36	.97	-.17	.94	-.29	.26	.12	72.5	72.4	GR005
15	11	40	-4.06	.36	1.02	.20	1.02	.16	.04	.12	72.5	72.4	GR015
21	11	40	-4.06	.36	.99	.02	.98	-.07	.15	.12	72.5	72.4	GR021
3	10	40	-4.19	.37	1.03	.24	1.03	.24	.00	.12	75.0	74.9	GR003
60	9	40	-4.33	.38	1.05	.31	1.09	.46	-.10	.11	77.5	77.4	GR060
24	3	40	-5.62	.60	1.03	.23	1.15	.45	-.12	.07	92.5	92.5	GR024
MEAN	20.8	40.0	-2.96	.34	1.01	-.1	1.04	.0			66.1	65.3	
P. SD	7.5	.0	.93	.05	.38	.9	.55	.9			12.2	10.5	

2) Analysis of the Wright Map (Person-Item Map)

Variable maps, also known as Wright Maps, illustrate the distribution of respondent (teacher) abilities and the difficulty levels of questionnaire items on the same scale.

Table 3. Variable Maps



Teachers with the codes GR028, GR042, and GR063 have the highest logit values, though these values are still considered moderate compared to other teachers, with a logit value of -0.40. Based on the map, since teachers GR042 and GR063 have the same logit value, it can be identified that both have similar abilities in answering the provided test items. On the other hand, teacher GR024 was only able to correctly answer 3 out of 40 questions.

The information provided by the Wright Map can assist school principals in evaluating teachers. Principals can identify individual teacher abilities. Additionally, because the logit scale has equal intervals on the Wright Map, the information obtained is precise. For example, researchers can determine the number of items that teachers could not answer correctly, allowing for targeted improvements to those items.

This study aims to analyze the level of knowledge of early childhood education (PAUD) teachers about the preparation of holistic assessment rubrics in South Arut District. This is assessed through a 40-item true-false test divided into 11 factors: understanding of assessment rubrics, content of assessment rubrics, descriptors of

assessment rubrics, benefits of assessment rubrics, types of assessment rubrics, assessment rubric templates, steps in developing assessment rubrics, stages of designing/preparing assessment rubrics, understanding of holistic rubrics, advantages and disadvantages of holistic rubrics, and steps for preparing holistic rubrics. The research findings indicate that the level of knowledge of PAUD teachers about the preparation of holistic assessment rubrics in South Arut District is categorized as 'moderate'.

The highest percentage is for 'low' knowledge, with 31 teachers or 47.7%, followed by 'moderate' knowledge at 38.4% or 25 teachers, and 'high' knowledge at only 13.9% or 9 teachers. These data suggest that the knowledge of PAUD teachers about preparing holistic assessment rubrics in South Arut District is not yet optimal, indicating that there is a need for further improvement in their understanding of holistic assessment rubric preparation.

The results of this study show that the level of knowledge of PAUD teachers in South Arut District regarding the preparation of holistic assessment rubrics is still relatively low. This is reflected in the survey results, which indicate that most PAUD teachers in South Arut District still face difficulties and do not fully understand how to prepare holistic assessment rubrics.

CONCLUSION

Based on the data analysis and discussion, it can be concluded that the level of knowledge of early childhood education (PAUD) teachers about the preparation of holistic assessment rubrics in South Arut District falls into the categories of "low," with 47.7% (31 teachers); "moderate," with 38.4% (25 teachers); and "high," with 13.9% (9 teachers). The average score of 20.78 places the knowledge level of PAUD teachers about holistic assessment rubric preparation in the "moderate" category.

Therefore, based on the findings of this study, there is a need for efforts to enhance the competence of PAUD teachers in South Arut District regarding the preparation of holistic assessment rubrics. Ongoing training and support related to the implementation of holistic assessment are crucial to improving teachers' understanding and skills in conducting comprehensive and integrative assessments of early childhood development. This, in turn, will contribute to improving the quality of PAUD education in South Arut District.

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