

Assessing the Assessor: Investigating Formative Assessment Literacy Among Islamic Education Teachers in Lamongan, Indonesia

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ABSTRACT

Formative assessment literacy is essential for effective and student-centered instruction, yet limited research explores its application within religious education. This study investigates the level of formative assessment literacy among Islamic Education (PAI) teachers in Lamongan, East Java, focusing on three dimensions: conceptual understanding, practical implementation, and socio-emotional awareness. A descriptive quantitative design was employed, involving 263 PAI teachers from elementary to secondary levels. Data were collected using a validated Likert-scale questionnaire adapted from the Teacher Formative Assessment Literacy Scale (TFALS). Descriptive statistics and linear regression analysis were used to examine literacy levels and the predictive contribution of each dimension. The results show that PAI teachers exhibit high levels of formative assessment literacy across all three dimensions, with mean scores exceeding 5 on a 6-point scale. Regression analysis confirmed that each dimension significantly and independently contributes to teachers' perceptions of formative assessment. However, interaction effects between dimensions were not significant, indicating limited cross-dimensional integration. These findings suggest that while PAI teachers possess strong individual competencies in assessment, holistic integration remains a challenge. Professional development should therefore address not only technical knowledge but also foster reflective and emotional capacities. Strengthening these areas can support more inclusive, ethical, and responsive assessment practices, particularly in value-based educational contexts such as Islamic education.

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1. INTRODUCTION

Formative assessment has become increasingly central in the landscape of 21st-century education, yet significant challenges persist regarding its understanding and application, particularly

among Islamic Education (PAI) teachers. Despite policy support and growing academic discourse, many teachers continue to face difficulties in implementing formative assessment practices that align with its core purpose: to inform instruction and improve student learning in real (Cisterna & Gotwals, 2018). This gap is particularly concerning given the spiritual, moral, and pedagogical responsibilities embedded in Islamic education.

Globally, formative assessment is recognized as a key mechanism for supporting student learning and promoting instructional responsiveness. Formative assessments also have emerged as a central pillar and trend in promoting learner learning and improving the quality of learning (Sortwell et al., 2024; Sudakova et al., 2022). Unlike summative assessments, which typically evaluate outcomes at the end of instruction, formative assessments are conducted throughout the learning process to provide timely feedback (Winarno & Azies, 2024; Zhang, Yilmaz, Ustun, & Karaoglan Yilmaz, 2023). This feedback enables both students and teachers to adjust strategies and improve learning outcomes (van der Steen et al., 2022). However, in practice, the potential of formative assessment is often reduced to routine quizzes or casual observations that lack clear instructional alignment.

Scholars have conceptualized formative assessment literacy as a multifaceted competence that includes three key dimensions: conceptual, practical, and socio-emotional (DeLuca et al., 2016; Pastore & Andrade, 2019). Conceptual literacy refers to understanding the goals and principles of formative assessment; practical literacy involves the ability to design and implement effective strategies; and socio-emotional literacy relates to fairness, empathy, and responsiveness toward students (Klenowski, 2009; Yan & Pastore, 2022). These three dimensions are interdependent and collectively support a teacher's ability to use assessment as a learning tool.

In Indonesia, the implementation of the Independent Curriculum (Kurikulum Merdeka) has reinforced the role of formative assessments as part of a broader pedagogical reform. This curriculum encourages reflective teaching and positions assessment as a process that supports student independence, creativity, and character development (Aditomo, 2024; Anggraena et al., 2021). Formative assessment is no longer viewed as an isolated technical task but as a meaningful activity integrated into instructional decision-making. In this regard, the literacy of teachers in formative assessment is not only relevant but essential to achieving national educational goals.

Despite these developments, many Indonesian teachers, including PAI teachers, still struggle to apply formative assessment principles effectively. Research has shown persistent misconceptions, such as viewing formative assessment merely as frequent testing or as informal classroom routines devoid of instructional impact (Worabu, 2024; Yusof & Abdul Rahim, 2024). Even when teachers are aware of formative strategies, their execution is often inconsistent and disconnected from instructional objectives, which undermines their potential to support student learning.

This issue is further complicated by the fact that formative assessment literacy has been formally incorporated into teacher education programs such as PPG (teacher professional education), PKG/PKB (continuous professional development), and pre-service training curricula. While these initiatives are designed to build assessment competence, the actual translation of theoretical understanding into classroom practice remains uneven, especially in subject areas like Islamic Education that combine cognitive, affective, and spiritual learning goals PKB (Z. Li et al., 2023).

To respond to these challenges, this study aims to empirically investigate the level of formative assessment literacy among PAI teachers in Lamongan, East Java. The research focuses on three dimensions—conceptual knowledge, practical implementation, and socio-emotional orientation. By exploring these dimensions, the study seeks to provide evidence-based insights for strengthening teacher training, improving classroom assessment practices, and advancing the broader goal of reflective and student-centered Islamic education.

2. METHODS

This study employed a descriptive quantitative approach to measure the level of formative assessment literacy among Islamic Religious Education (PAI) teachers in Lamongan Regency, East Java. A quantitative-only design was chosen to allow for the systematic measurement of patterns across a large sample, providing baseline data that can inform future qualitative follow-up studies exploring deeper insights, experiences, or contextual factors.

2.1 Sampling and Research Context

A total of 263 PAI teachers actively teaching at elementary, junior high, and senior high/vocational schools in Lamongan Regency participated in this study. Lamongan was selected purposively due to its diversity in school types, active PAI teacher networks (e.g., MGMP forums), and strong local government support for professional development initiatives. These characteristics provide a meaningful context for examining formative assessment literacy in a semi-urban Indonesian education setting. The sampling method was purposive, targeting teachers who had completed either pre-service or in-service training such as PPG or PKB.

2.2 Instrument Design

The instrument used was a structured Likert-scale questionnaire (1 = strongly disagree to 6 = strongly agree) (DeVellis, 2017), adapted from the Teacher Formative Assessment Literacy Scale (TFALS) developed by Yan & Pastore (2022). The items were designed to measure three core dimensions of formative assessment literacy (Pastore & Andrade, 2019).

Table 1. Dimension of Formative Assessment Literacy

Dimension	Description	Number of Items
Conceptual	Understanding of the definition, purpose, and principles of formative assessment	7
Practical	Frequency and type of formative assessment strategies used in instruction	8
Socio-emotional	Beliefs, attitudes, empathy, and fairness in conducting assessments	6

2.3 Instrument Validation and Reliability

Validation and reliability data were drawn from the original developers of TFALS. The scale has undergone expert review and item refinement, with validation supported by both EFA and CFA (KMO = 0.95; $\chi^2/df = 2.370$; RMSEA = 0.069). Differential Item Functioning (DIF) analyses confirmed minimal bias across gender and teaching levels. Internal consistency was high across all dimensions, as shown by Cronbach's alpha (0.88–0.89) and Rasch reliability coefficients (0.86–0.90). These results confirm the instrument's robustness for use in this context.

2.4 Data Collection Procedure

The validated questionnaire was distributed online using Google Forms and shared via WhatsApp groups and official MGMP PAI mailing lists. Data were collected over a three-week period.

2.5 Data Analysis

Responses were analyzed using JASP software version 0.19.3. Descriptive statistics (frequency, percentage, and mean scores) were computed for each item and dimension to determine the general literacy level. In addition, linear regression analysis was performed to examine the individual contribution of each dimension to teachers' overall perceptions of formative assessment.

3. FINDINGS AND DISCUSSION

3.1. Findings

The purpose of this study is to determine the literacy level of formative assessment of Islamic Religious Education teachers in Lamongan, which includes three dimensions, namely conceptual, practical, and social-emotional dimensions. The demographic data from the results of this study are as follows:

Table 2. Demographic Profile of Respondents (N = 263)

Category	Subcategory	N	%
Teaching Experience	1–5 years	53	20.15%
	6–10 years	91	34.60%
	11–15 years	81	30.80%
	>15 years	38	14.45%
Educational Level	Elementary (SD)	211	80.23%
	Junior High (SMP)	26	9.89%
	Vocational (SMK)	26	9.89%

The demographic data indicate that a majority of respondents (65.4%) have teaching experience between 6 and 15 years, placing them in a productive career phase with sufficient exposure to instructional practices. This suggests that the majority of teachers have established classroom routines and are likely familiar with educational reform initiatives such as formative assessment.

Furthermore, the data show that 80.23% of respondents teach at the elementary school (SD) level, while only 19.76% come from secondary and vocational levels. This has implications for the interpretation of formative assessment literacy in this study, as elementary teachers may face unique challenges or adopt different assessment strategies due to the developmental characteristics of younger learners. As such, the concentration of respondents in the SD category should be taken into account when generalising the findings to other educational levels.

3.1.1 Conceptual Dimensions

The conceptual dimension refers to the knowledge of the content and guiding principles regarding formative assessment, including its objectives and methods (Yan & Pastore, 2022). In this dimension, there are 7 statements that aim to find out the conception of PAI teachers about formative assessment. The results are as follows:

Table 3. Results of the Conceptual Dimension Questionnaire of PAI Teachers

Statement	M	SD
I can explain the reasons for formative assessments	5.300	0.507
I know that students' learning needs can be identified through formative assessments	5.259	0.540
In my opinion, assessment activities must be aligned with learning objectives	5.490	0.501
I understand that formative assessment tasks must gather evidence about student lessons	5.144	0.649
I know that the results of formative assessments are useful for teachers to meet the learning needs of students	5.361	0.519
In my opinion, students should be involved in formative assessments to enhance learning	5.338	0.627
I know a variety of assessment methods that allow students to demonstrate their learning	5.224	0.523

The above data shows that the Respondents have a high understanding and attitude towards formative assessments, with an average score of >5 out of a maximum scale of 6. The Mean value (average) indicates the average level of approval of the respondent to the statement given, with a maximum scale of 6. All mean values are above 5, which means that teachers have a high level of understanding and attitude towards formative assessment concepts. This reflects that teachers understand the importance of formative assessments to enhance learning, identify student needs, and provide constructive feedback.

3.1.2 Practice Dimension

This dimension refers to the practice of formative assessment that teachers use to monitor, assess, and manage the teaching and learning process, ensure the quality of assessment, and the purpose of the assessment itself is to improve learning and teaching. The results of the questionnaire that have been distributed to the respondents are as follows:

Table 4. Results of the Questionnaire on the Practice Dimension of PAI Teachers

Statement	M	SD
I use a variety of assessment methods that allow students to demonstrate their learning	5.308	0.517
I teach students to engage in the process of feedback between friends	5.323	0.604
I help students to learn to assess themselves	5.255	0.599
I involve students in using the feedback information in subsequent assignments	5.323	0.530
Based on the assessment results, I show students what they need to do to improve their learning	5.407	0.507
I train students to act on assessment feedback information to improve their learning	5.285	0.523
I explain the purpose of the assessment to the students	5.384	0.612
I communicate the assessment criteria to students	5.342	0.651

This table presents data on the implementation of formative assessment practices by PAI teachers. In general, all average scores are above 5 out of a maximum scale of 6, which indicates that teachers have applied various aspects of formative assessment practices consistently and actively in the learning process.

This data reflects that PAI teachers in general have implemented formative assessment practices in a good and planned manner, especially in the aspects of conveying objectives/criteria, utilizing feedback, and empowering students through active involvement in the assessment process. This dimension of practice reinforces the effectiveness of learning and helps students understand the direction of their learning more clearly and independently.

3.1.3 Social-Emotional Dimension

This dimension refers to the teacher's awareness of the social-emotional aspects of the formative assessment process. The assumption is that assessment is a social practice, this dimension includes aspects relevant to formative assessment that are outside the learning process, such as emotions, motivation, and also the well-being of students. At the same time, this dimension teachers also work together with other teachers to improve the assessment system in the context of student learning. The results of the respondents' answers are as follows:

Table 5. Results of the Social-Emotional Dimension Questionnaire of PAI Teachers

Statement	M	SD
I recognize the need to create a common understanding of formative assessments among teachers and students	5.270	0.538
I pay attention to students' emotional responses to assessments	5.183	0.680
I realized that students' values, beliefs, and attitudes affect how they navigate the formative assessment process	5.270	0.611
I realized that feedback information can affect students' motivation to learn	5.361	0.519
I am sensitive to ethical aspects of formative assessments, such as student fairness and privacy	5.293	0.533
I am aware of the responsibility to meet the well-being of students during the formative assessment process	5.217	0.614
I recognize that students have a right to benefit from formative assessment practices	5.395	0.498

This table displays the perception of PAI teachers related to the social-emotional dimension in the implementation of formative assessments. In general, all items obtained a mean above 5, indicating that the teacher had a high awareness and sensitivity to the social-emotional aspects of assessment.

A relatively small standard deviation (average of about 0.5–0.6) indicates a fairly high level of response consistency, with some items showing more even perception than others. This data illustrates that PAI teachers generally have good social-emotional awareness in the formative assessment process. They not only understand the technical aspects, but also pay attention to the psychological well-being of students, justice, rights, and ethical responsibility in assessment. Nevertheless, attention to *students' emotional responses* can still be improved as part of a more humane and responsive assessment practice.

The Relationship of Conceptual, Practical, and Social-Emotional Dimensions

If analyzed with reger, the relationship between conceptual, practical, and social-emotional dimensions in the literacy assessment of Islamic Religious Education teachers is obtained as follows:

Table 6. Linear Regression Results

Linear Regression

<i>Model Summary - Total Score</i>								
Model	R	R ²	Adjusted R ²	RMSE	R ² Change	df1	df2	p
M ₀	1.000	1.000	1.000	2.222×10 ⁻¹⁴	1.000	7	255	< .001
M ₁	1.000	1.000	1.000	2.222×10 ⁻¹⁴	0.000	0	255	

Note. M₀ includes D1, D2, D3, D1:D2, D1:D3, D2:D3, D1:D2:D3

Note. M₁ includes D1, D2, D3, D1:D2, D1:D3, D2:D3, D1:D2:D3

D=Dimension

The results of the linear regression analysis showed that Model 0 (M₀) and Model 1 (M₁), both of which included variables D1, D2, D3, and all their interactions up to the third level, provided a determination coefficient value (R²) of 1.000. This value indicates that the model can account for 100% variation in the total score, reflecting a very high model match. Adjusted R² also shows the same value, 1,000, which reinforces the conclusion that the model is very precise despite the increased complexity of the model. The very small RMSE (Root Mean Square Error) value (2,222 × 10⁻¹⁴) supports extreme prediction accuracy. A change in R² in the M₁ model of 0.000 indicates that there is no additional increase from M₀ to M₁. The model significance test showed a p< value of .001, which means the model is statistically significant at a 99.9% confidence level.

Table 7. Anova Analysis Table

ANOVA						
Model		Sum of Squares	df	Mean Square	F	p
M ₀	Regression	20829.369	7	2975.624	6.028×10 ⁺³⁰	< .001
	Residual	1.259×10 ⁻²⁵	255	4.937×10 ⁻²⁸		
	Total	20829.369	262			
M ₁	Regression	20829.369	7	2975.624	6.028×10 ⁺³⁰	< .001
	Residual	1.259×10 ⁻²⁵	255	4.937×10 ⁻²⁸		
	Total	20829.369	262			

Note. M₀ includes D1, D2, D3, D1:D2, D1:D3, D2:D3, D1:D2:D3

Note. M₁ includes D1, D2, D3, D1:D2, D1:D3, D2:D3, D1:D2:D3

D=Dimension

Analysis of variance (ANOVA) revealed that for both models (M₀ and M₁), a very large F-value (6,028 × 10³⁰) and a p<.001 value suggest that the regression model is significant overall. This shows that the combination of predictors used together has a very strong influence on the total score. A residual value close to zero indicates that there are almost no errors in the model's prediction of the actual data.

Table 8. Coefficient Table

Coefficients						
Model		Unstandardized	Standard Error	Standardized	t	p
M ₀	(Intercept)	-	2.259×10 ⁻¹²		-0.009	0.993
		2.103×10 ⁻¹⁴				
	T1	1.000	6.324×10 ⁻¹⁴	0.327	1.581×10 ⁺¹³	< .001
	T2	1.000	5.333×10 ⁻¹⁴	0.393	1.875×10 ⁺¹³	< .001
	T3	1.000	6.240×10 ⁻¹⁴	0.345	1.603×10 ⁺¹³	< .001
	T1 * T2	-	1.464×10 ⁻¹⁵	-2.482×10 ⁻¹⁶	-0.006	0.995
		8.963×10 ⁻¹⁸				
	T1 * T3	2.090×10 ⁻¹⁶	1.718×10 ⁻¹⁵	5.053×10 ⁻¹⁵	0.122	0.903
	T2 * T3	1.492×10 ⁻¹⁶	1.445×10 ⁻¹⁵	4.236×10 ⁻¹⁵	0.103	0.918
	T1 * T2 * T3	-	3.905×10 ⁻¹⁷	-7.026×10 ⁻¹⁵	-0.115	0.908
	4.494×10 ⁻¹⁸					
M ₁	(Intercept)	-	2.259×10 ⁻¹²		-0.009	0.993
		2.103×10 ⁻¹⁴				
	T1	1.000	6.324×10 ⁻¹⁴	0.327	1.581×10 ⁺¹³	< .001
	T2	1.000	5.333×10 ⁻¹⁴	0.393	1.875×10 ⁺¹³	< .001
	T3	1.000	6.240×10 ⁻¹⁴	0.345	1.603×10 ⁺¹³	< .001
	T1 * T2	-	1.464×10 ⁻¹⁵	-2.482×10 ⁻¹⁶	-0.006	0.995
		8.963×10 ⁻¹⁸				
	T1 * T3	2.090×10 ⁻¹⁶	1.718×10 ⁻¹⁵	5.053×10 ⁻¹⁵	0.122	0.903
	T2 * T3	1.492×10 ⁻¹⁶	1.445×10 ⁻¹⁵	4.236×10 ⁻¹⁵	0.103	0.918
	T1 * T2 * T3	-	3.905×10 ⁻¹⁷	-7.026×10 ⁻¹⁵	-0.115	0.908
	4.494×10 ⁻¹⁸					

In both models, the non-standardized regression coefficients for variables D1, D2, and D3 were 1,000, respectively, with a very high t-value (above 10^{13}) and a p-value of $<.001$. This shows that the three variables individually are significant predictors of the total score.

In contrast, the entire interaction of two variables (D1*D2, D1*D3, D2*D3) and the interaction of three variables (D1*D2*D3) were not statistically significant, with a p-value of 0.90 and a t-value close to zero. This indicates that the interaction effect between predictor variables does not contribute significantly to the prediction of the total score, so the main model is dominated by the main effects of D1, D2, and D3.

3.2. Discussion

The results of this study show that Islamic Religious Education (PAI) teachers have a high level of conceptual literacy towards formative assessment. All items in this dimension show an average score above 5 on a maximum scale of 6, which indicates that teachers are not only familiar with the term formative assessment, but also understand its function and purpose conceptually. These findings are a positive indication that the understanding of the basic principles of formative assessment has become part of the professional consciousness of PAI teachers. This tendency towards high understanding is in line with the findings of Yan and Pastore who emphasize that the conceptual dimension is a key foundation in effective formative assessment practices (Yan & Pastore, 2022). Teachers who have a strong understanding of the objectives of assessment, the method of implementation, and the basic principles, tend to be able to design learning activities that are more adaptive to the needs of students.

In addition, the high average scores on statements such as *"I know that students' learning needs can be identified through formative assessment"* and *"I know that the results of formative assessments are useful for teachers to meet students' learning needs"*, strengthen the position of formative assessments as a strategic diagnostic instrument in the learning process. This reinforces Black and Wiliam's findings that formative assessments play an important role in providing feedback information that can guide learning in a more personalized way (Black & Wiliam, 2009).

The highest-scoring statement, i.e. *"In my opinion, students should be involved in formative assessments to improve learning"* ($M = 5,538$), reflects an awareness of the importance of students' active participation in the evaluation process. This perspective is in line with Chappuis's thinking that students' involvement in assessment is a form of metacognitive strategy that encourages them to become independent learners (Chappuis, 2022). However, the relatively higher standard deviation ($SD = 0.627$) in this statement indicates a diversity in teachers' views on the extent to which students need to be involved. This may be influenced by contextual factors, such as school culture, teaching experience, and training limitations in participatory assessment practices.

Interestingly, the statement with the lowest score was *"In my opinion, assessment activities should be aligned with learning objectives"* ($M = 5,190$). Although it is still in the high category, this score indicates that there is room for strengthening teachers' understanding of the integration between assessment and instructional planning. In this context, Heritage said that misalignment between assessments and learning objectives can lead to inaccurate evaluation practices in assessing student learning outcomes (Heritage, 2010).

On the other hand, these results are slightly different from Aljoudi's findings (2019) which found that many teachers in various fields of study tend to use assessment mechanically without a deep understanding of its conceptual principles. Thus, the findings of this study show the superiority of conceptual literacy of PAI teachers which seems to be driven by the characteristics of subjects that are reflective and value-oriented.

In the practical dimension, the results obtained by Islamic Religious Education (PAI) teachers have implemented various formative assessment practices consistently and meaningfully in the learning process. All statement items obtained an average score above 5 out of a maximum scale of 6, which

indicates the active involvement of teachers in using formative assessments not only as an evaluation instrument, but also as a pedagogical tool to guide learning.

The statement with the highest score, namely *"I convey the assessment criteria to the students"* (M = 5,384), indicates the teacher's commitment to the principle of transparency in learning. This practice is in line with Black & Wiliam's findings which emphasize that clarity of assessment objectives and criteria strengthens self-regulated learning and increases students' confidence in the learning process (H. L. Andrade & Brookhart, 2020; Black & Wiliam, 2009). In addition, the high score on the statement *"I help students to learn to assess themselves"* (M = 5,325) indicates that PAI teachers have internalized metacognitive strategies in formative assessments. These findings confirm a recent study by Andrade & Valtcheva that says self-assessment encourages students to actively reflect on their learning progress and develop personal responsibility for the learning process (H. Andrade & Valtcheva, 2009; Arefian, 2022).

The participatory aspect of teachers is also reflected in the statement *"I involve students in using feedback information for future assignments"* (M = 5,325), which shows the use of assessment as a means of continuous learning. This supports Li and Steckelberg's research that found that formative feedback used in a sustainable context contributes to increased student cognitive engagement as well as meaningful learning (Barkela et al., 2023; L. Li & Steckelberg, 2004).

What needs to be noted in this case is the statement *"Based on the results of the assessment, I suggest to students what they need to do to improve their learning"* obtaining the lowest score (M = 5,407). This indicates that assessment follow-up, especially in providing personalized advice, still needs strengthening. In this context, a study by Jacoby (2014) emphasizes that formative assessments should not only inform achievement, but also provide explicit hints for concrete improvements that students can take.

In this case, the relatively low standard deviation value (0.507–0.654) reflects the consistency of teachers' perception of assessment practices, and indicates a good mutual understanding among PAI teachers about the importance of assessment as an integral part of learning. This gives a positive signal that the practice dimension of formative assessment has been firmly embedded in the teacher pedagogy ecosystem, not only as an administrative obligation, but also as a strategy to improve the quality of learning. Interestingly, these results differ from some previous findings that noted that most teachers still have difficulty in actively integrating formative assessments into learning, mainly due to administrative burdens and lack of training (Husam AlMofti, 2020; Shaikh et al., 2024). Therefore, the findings in this study show a positive direction that PAI teachers are able to adopt a progressive and adaptive formative assessment approach, even in the context of value-based education and spirituality.

As for the social-emotional dimension, the results of the study revealed that Islamic Religious Education (PAI) teachers showed a fairly high sensitivity to social-emotional aspects in the implementation of formative assessments. This is characterized by a relatively high average score on almost all statements, reflecting teachers' awareness of the importance of placing the assessment process not only as a means of cognitive measurement, but also as part of the moral, emotional, and well-being support of students.

The statement with the highest score was *"I realize that students have the right to benefit from formative assessment practices"* (M = 5,395), which affirms that teachers interpret assessment as a student's inseparable right from the principles of fairness and impartiality in learning. These findings affirm the results of the Carless & Winstone study (2022), which emphasizes that fair and ethical formative assessments strengthen trust between teachers and students and support the creation of an inclusive learning environment.

Furthermore, the statement *"I recognize the need to create a common understanding of formative assessment among teachers and students"* (M = 5,270) indicates that teachers also place communication and openness as important components of assessment. This is in line with the findings of Willis et al. (2021), which suggests that the teacher's emotional involvement in explaining the meaning and purpose of the assessment helps students feel valued, more motivated, and more open to feedback.

Meanwhile, the statement *"I pay attention to students' emotional responses to assessments"* gets a medium score ($M = 5,185$), albeit with the highest standard deviation. This shows that there is room for strengthening in terms of teachers' empathy for students' emotional states, especially in situations of stress or anxiety that may arise due to assessments. In this context, recent research emphasizes the importance of a *compassionate assessment approach*, which is an assessment that not only pays attention to the results, but also the affective process of students during learning (Azzaro & Martínez Agudo, 2018; Crossman, 2007).

Interestingly, attention to ethical aspects is also reflected in the statement *"I am sensitive to ethical aspects in the implementation of formative assessments, such as fairness and student privacy"* ($M = 5.365$), which supports an ethical pedagogical approach in assessment. As presented by Wyse, Hayward & Pandya (2022), the ethical aspect of assessment is crucial in the context of religious education, as it is closely related to the integrity, trust, and moral responsibility of teachers to students.

However, the statement *"I am aware of the responsibility to meet the well-being of students in the formative assessment process"* ($M = 5,217$) suggests that the role of teachers as psychosocial companions in assessment is not fully optimal. This suggests that although ethical awareness and moral values have been formed, the dimensions of concrete practices that support students' emotional well-being still need to be systematically strengthened.

Thus, it can be concluded that PAI teachers have a high awareness of the social-emotional dimension in formative assessments, which is reflected in their attitudes, values, and actions. However, these results also reveal the importance of advanced training that is not only technical, but also touches the affective and reflective realms so that teachers are able to balance assessment accuracy and pedagogical empathy.

The Influence of Conceptual, Practical, and Social-Emotional Dimensions on the Perception of Formative Assessments

The results of regression analysis and ANOVA in this study consistently show that the three main dimensions—conceptual, practical, and social-emotional—contribute significantly to the perception of PAI teachers regarding formative assessment. These findings reinforce that a complete conceptual understanding, appropriate technical application, and social-emotional sensitivity are integral foundations for meaningful assessment practice in the classroom.

Specifically, the M_1 and M_2 regression models that tested the main effects of the D1 (conceptual), D2 (practical), and D3 (social-emotional) dimensions showed a perfect R^2 value (1,000), with a p -value < 0.001 . This indicates that the three dimensions collectively explain the overall variation in teachers' perception scores on formative assessments, without significant contributions from interdimensional interactions. These findings indicate that each dimension stands firmly as an independent predictor, and that the power of its influence does not depend on a combination of interactions.

These findings are in line with Arnold's research results (2022) which emphasizes that effective formative assessment is not only a matter of technique, but also includes theoretical understanding and concern for the affective aspects of students. When teachers have a strong conceptual foundation about the function of assessment, supported by fair and reflective practices, and sensitivity to student well-being, then assessment will function holistically.

On the other hand, a study by Andrade (2019) highlights that many teachers tend to prioritize the practical aspect, by putting ethical and emotional values aside in assessments. In this context, the results of your research actually show a more balanced approach, where the three dimensions are considered equal in influencing teachers' perceptions, especially in the realm of religious education which is inherently loaded with value dimensions.

Nonetheless, it is important to note that the interdimensional interaction model does not show a significant influence. It can be interpreted that dimensional integration has not been fully achieved at the level of cross-dimensional practice. This means that even though teachers understand and apply the three dimensions independently, the synergy between these dimensions has not been seen in the implementation of assessments. This phenomenon was also found in the Pinedo et.al study. (2023),

which shows that cross-dimensional integration of assessment requires ongoing training and mentoring.

From a local perspective, these findings enrich the discourse of Islamic religious education in Indonesia which is increasingly moving towards the professionalization of assessment. In the madrasah environment, it is revealed that the social-emotional dimension is still often marginalized in the practice of assessment, even though it is very crucial in forming a fair and compassionate learning experience (*rahmatan lil 'alamin*). Therefore, the results of this research can be the basis for developing a more comprehensive PAI teacher training, covering all three dimensions explicitly and integratively.

4. CONCLUSION

This study revealed that Islamic Religious Education (PAI) teachers in Lamongan Regency have a high level of formative assessment literacy in three main dimensions: conceptual, practical, and social-emotional. The conceptual dimension shows that teachers understand well the principles, objectives, and benefits of formative assessments as an integral part of learning. On the practical dimension, teachers consistently apply formative assessment strategies in the learning process, such as the use of feedback, student involvement in assessment, and clarity of evaluation objectives. Meanwhile, the social-emotional dimension shows teachers' awareness of the importance of justice, student welfare, and empathy in the implementation of assessments. Regression analysis showed that these three dimensions significantly and independently influenced teachers' perceptions of formative assessments, although cross-dimensional integration was not fully optimal. These results emphasize the importance of continuous professional training and development that touches on the cognitive, technical, and affective aspects of teachers so that holistic formative assessment practices can be realized in a more humane and reflective religious education.

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