



Operationalizing Teacher Training Programs to Support Creativity and Standardized Assessment in Early Childhood Institutions

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Abstract. This study reports on the implementation of a teacher training program aimed at enhancing pedagogical creativity and the adoption of standardized assessment practices in early childhood institutions. The program was conducted for PAUD teachers in Desa Cicapar, Ciamis Regency, and facilitated by university lecturers with student support. Training activities included the development of creative instructional materials, interactive learning modules, and hands-on sessions on institutional assessment procedures aligned with curriculum standards. 30 Participants actively engaged in discussions, question-and-answer sessions, and practical exercises to strengthen understanding of assessment tools and creative teaching strategies. Results indicate that the training improved teachers' competence in designing innovative learning resources, applying standardized assessment techniques, and understanding administrative requirements for evaluating student progress. Additionally, the program fostered collaboration between the university, teachers, and local education stakeholders, creating a platform for knowledge exchange and capacity building. The findings highlight the effectiveness of structured, participatory training programs in supporting teacher professional development and advancing early childhood education quality. The study provides insights for scaling similar initiatives in rural educational contexts and integrating practical training with institutional standards.

Keywords: assessment, early childhood, innovation, teacher training, pedagogy

Abstrak. Penelitian ini melaporkan pelaksanaan program pelatihan guru yang bertujuan meningkatkan kreativitas pedagogik dan penerapan asesmen standar di lembaga Pendidikan Anak Usia Dini (PAUD). Program ini dilaksanakan bagi guru PAUD di Desa Cicapar, Kabupaten Ciamis, dan difasilitasi oleh dosen perguruan tinggi dengan dukungan mahasiswa. Kegiatan pelatihan mencakup pengembangan alat peraga edukatif kreatif, modul pembelajaran interaktif, serta sesi praktik mengenai prosedur asesmen lembaga sesuai standar kurikulum. 30 peserta aktif berpartisipasi melalui diskusi, sesi tanya jawab, dan latihan praktik untuk memperkuat pemahaman mengenai alat asesmen dan strategi pembelajaran kreatif. Hasil menunjukkan bahwa pelatihan meningkatkan kompetensi guru dalam merancang sumber belajar inovatif, menerapkan teknik asesmen standar, dan memahami persyaratan administratif evaluasi perkembangan anak. Selain itu, program ini mendorong kolaborasi antara perguruan tinggi, guru, dan pemangku kepentingan pendidikan lokal, menciptakan ruang pertukaran pengetahuan dan peningkatan kapasitas. Temuan ini menegaskan efektivitas program pelatihan yang terstruktur dan partisipatif dalam mendukung pengembangan profesional guru serta peningkatan kualitas pendidikan anak usia dini. Studi ini memberikan wawasan untuk pengembangan program serupa di konteks pendidikan pedesaan serta integrasi pelatihan praktis dengan standar institusi.

Kata kunci: asesmen, inovasi, pedagogi, pelatihan guru, pendidikan anak usia dini

INTRODUCTION

Effective early childhood education necessitates that teachers integrate both pedagogical creativity and the capacity to implement standardized assessment practices to foster holistic development in young learners. Pedagogical creativity enables educators to design engaging, developmentally appropriate learning experiences that stimulate cognitive, social, emotional, and problem-solving skills, contributing to a dynamic and responsive learning environment. Existing research consistently emphasizes that creative teaching is a critical determinant of instructional quality in early childhood education, influencing lesson planning, selection of teaching methods, and the development of innovative learning resources that captivate learners' attention and curiosity (Dhiu & Laksana, 2021; Kewalramani & Veresov, 2022). Yet, empirical studies reveal enduring challenges in translating creative theory into classroom practice. Many educators encounter difficulties due to limited access to structured professional development programs, constrained opportunities for experimentation, and insufficient institutional mechanisms to support reflective pedagogical innovation (Haslip & Donaldson, 2021; Leggett, 2017; Millei & Jones, 2014). Consequently, there is a pronounced need for systematic, operationalized interventions that not only teach the principles of creativity but also embed them in practical, iterative, and contextually relevant classroom applications.

Equally imperative is the operationalization of standardized assessment practices, which provide reliable, consistent measures of student development, learning outcomes, and the overall effectiveness of early childhood programs. These assessments allow teachers to monitor progress, identify learning gaps, tailor instructional interventions, and maintain alignment with established curriculum standards (Ahtiainen et al., 2021; Alramamneh et al., 2023; Barbu et al., 2015). Despite their critical role, implementation remains a persistent challenge. Studies indicate that many early childhood teachers lack sufficient training in assessment procedures, struggle to navigate unfamiliar instruments, and experience difficulty balancing administrative responsibilities with instructional demands (Bird & Charteris, 2021; Nordström, 2022; Suebsing et al., 2024). Furthermore, a notable gap exists between theoretical awareness and practical competence, as educators often understand the principles of assessment but lack the operational skills to execute them accurately and efficiently in daily classroom contexts (Fernandes, 2024; Nyland & Ng, 2016). These limitations underscore the necessity of structured, participatory professional development programs that simultaneously cultivate creative pedagogy and operational assessment skills, enabling teachers to design engaging lessons while systematically evaluating and enhancing learning outcomes.

Teacher training programs have increasingly been recognized as a strategic approach to enhancing early childhood educators' pedagogical creativity and assessment competencies, yet current evidence indicates that many initiatives remain fragmented, predominantly theoretical, or insufficiently tailored to the contextual realities of teachers' daily practice. Research consistently emphasizes that the most effective professional development programs integrate hands-on activities, collaborative learning, and explicit alignment with institutional and curriculum standards, enabling teachers to apply new knowledge directly within their classrooms (Dhiu & Laksana, 2021; Junanto & Utami, 2020; Shah et al., 2018). In early childhood education specifically, programs that combine practical skill-building, structured feedback, and reflective practice have been shown to enhance teachers' instructional quality, confidence, and problem-solving capacity, ultimately supporting better learning experiences for young children (Franks et al., 2025; Park et al., 2017). Despite these insights, persistent gaps remain in translating training into meaningful classroom implementation, particularly in contexts where educators contend with diverse learner needs, limited resources, and competing administrative responsibilities (Fonsén & Soukainen, 2020; Hayes et al., 2021; Ross & Ascetta, 2025). Moreover, many initiatives address either creativity or assessment in isolation,

overlooking the synergistic potential of integrating innovative teaching with systematic, standardized evaluation. This fragmentation constrains the capacity of professional development programs to produce measurable improvements in both teaching practice and student learning outcomes, highlighting the need for cohesive, context-sensitive interventions that operationalize creativity and assessment simultaneously.

The existing body of knowledge identifies several interrelated gaps that the present study aims to address. First, while creativity is widely recognized as essential, there is a lack of structured, operationalized training programs that equip teachers with both creative instructional skills and practical strategies for applying them in alignment with institutional standards. Second, standardized assessment remains underutilized in practice due to insufficient operational guidance for teachers, despite widespread recognition of its importance. Third, most professional development initiatives do not integrate creativity and assessment in a holistic, participatory framework, limiting their impact on teacher performance and learning quality. Collectively, these gaps highlight the need for an evidence-informed, operationalized teacher training program that systematically develops creativity while simultaneously enhancing technical competence in standardized assessment. In response to these gaps, the present study is guided by two objectives. The first objective is to design and implement a teacher training program that enhances pedagogical creativity in early childhood educators. The second objective is to operationalize the application of standardized assessment practices within the program, ensuring that teachers acquire both conceptual understanding and practical skills to evaluate learning outcomes effectively. These objectives are intended to integrate creativity and assessment in a coherent professional development model, thereby addressing critical deficiencies identified in the literature and contributing to improved teaching quality in early childhood institutions.

REVIEW OF LITERATURE

Pedagogical Creativity in Early Childhood Education

Pedagogical creativity is widely acknowledged as a critical component of effective early childhood education, as it enables teachers to design engaging, flexible, and developmentally appropriate learning experiences that stimulate cognitive, social, and emotional growth in young learners. Creativity in teaching involves the ability to generate novel instructional strategies, adapt learning materials to diverse student needs, and foster active participation in learning activities (Millei & Jones, 2014; Nyland & Ng, 2016; Suebsing et al., 2024). Prior studies have demonstrated that teacher creativity directly impacts student motivation, learning engagement, and the quality of instructional delivery (Fernandes, 2024; Nikolopoulou et al., 2019). Despite the recognized importance, many early childhood educators encounter challenges in translating theoretical understanding into practical classroom strategies. Limited access to structured professional development programs, lack of institutional support, and insufficient opportunities for reflective practice hinder the systematic development of pedagogical creativity (Shah et al., 2018). Research also indicates that creativity training is often delivered in isolation, focusing on general creative thinking rather than integrating with curriculum design and instructional assessment (Dhiu & Laksana, 2021; Junanto & Utami, 2020). These findings highlight a critical gap: while the value of pedagogical creativity is well-established, there remains a lack of structured, operationalized interventions that enable teachers to apply creative strategies in a systematic and sustainable manner within early childhood institutions.

Standardized Assessment Practices

Standardized assessment is essential in early childhood education to ensure reliable evaluation of learning outcomes, curriculum alignment, and educational quality (Barbu et al., 2015; Bird & Charteris, 2021). Standardized assessment tools provide consistent measures of student development, enabling teachers to identify strengths, address learning gaps, and monitor progress effectively (Ahtiainen et al., 2021). Studies indicate that teachers often face challenges in implementing these tools due to insufficient training, limited familiarity with assessment procedures, and administrative burdens that compete with instructional time (Dhiu & Laksana, 2021; Junanto & Utami, 2020). Moreover, a disconnect exists between awareness of assessment standards and the practical ability to operationalize them in classroom contexts, which undermines the potential impact of standardized evaluation on student learning (Franks et al., 2025; Park et al., 2017). While professional development initiatives have been implemented to enhance assessment skills, many are fragmented or theoretical, providing insufficient hands-on experience for teachers to apply knowledge to actual instructional and evaluative processes (Fonsén & Soukainen, 2020; Ross & Ascetta, 2025). This gap underscores the need for comprehensive programs that integrate technical training with practical exercises, enabling educators to implement standardized assessment effectively while maintaining instructional creativity.

Teacher Training Programs and Professional Development

Professional development is recognized as a key strategy for addressing gaps in teacher competence, particularly in early childhood education. Effective training programs incorporate active learning, collaboration, feedback, and contextual relevance to enhance teaching quality (Buldu & Buldu, 2021; Duraku et al., 2025; Leggett & Ford, 2013). Evidence from prior studies shows that programs emphasizing participatory approaches and practical skill application improve both instructional strategies and teacher confidence (Franks et al., 2025; Suebsing et al., 2024). However, limitations exist in current practices. Many teacher training programs focus narrowly on either pedagogical creativity or assessment skills, failing to provide an integrated approach that combines both critical components (Bird & Charteris, 2021; Clayback et al., 2023; Park et al., 2017). Additionally, programs often lack mechanisms for monitoring the translation of training content into classroom practice, which reduces the sustainability and measurable impact of professional development initiatives. These gaps highlight the need for operationalized programs that systematically strengthen creativity while simultaneously building competence in standardized assessment within early childhood settings.

Theoretical Framework and the Study Context

This study is grounded in constructivist and experiential learning theories, which emphasize active participation, reflection, and the co-construction of knowledge between educators and learners (Simons, 2000; Tzuriel, 2021). The operationalization of teacher training programs draws upon the principle that effective professional development must integrate theory, practical application, and continuous feedback to support skill acquisition and behavioral change. In this framework, pedagogical creativity and standardized assessment are treated as interrelated variables, where creative instructional strategies are informed and enhanced by systematic evaluative practices. The study context is situated at STAI Putra Galuh Ciamis, West Java, Indonesia, a higher education institution actively engaged in strengthening teacher competencies for early childhood education. This setting was selected due to its strategic role in bridging academic expertise and educational practice in rural and semi-urban regions, offering a representative context to generalize findings to other early childhood education settings in Indonesia. The training program was implemented for PAUD teachers, facilitated by university lecturers with support from students, and included the

development of creative instructional materials, interactive learning modules, and hands-on sessions for institutional assessment aligned with curriculum standards. Participants engaged actively in discussions, practical exercises, and reflective sessions to strengthen both creativity and technical competence, demonstrating the feasibility of operationalizing integrated training programs in early childhood institutions.



Figure 1. The Study Context

METHOD

Research Design

This study employed a program implementation research design, integrating qualitative and quantitative approaches to evaluate the effectiveness of a teacher training program aimed at enhancing pedagogical creativity and the adoption of standardized assessment practices in early childhood education. The research design emphasizes the systematic operationalization of training variables, hands-on application, and structured evaluation to capture both observable teacher behaviors and self-reported competence. The study is categorized as action-oriented implementation research, where interventions are planned, executed, and monitored within a real-world setting to generate both practical insights and evidence-based recommendations (Creswell, 2012; Creswell et al., 2004). The two primary variables were operationalized as follows:

- Pedagogical Creativity (Independent Variable): Defined as the ability of teachers to design innovative instructional strategies, develop interactive learning materials, and adapt teaching techniques to stimulate student engagement and problem-solving skills. It was measured through observation rubrics, participant-created learning materials, and reflective journals.
- Standardized Assessment Competence (Dependent Variable): Defined as the capacity of teachers to accurately administer, interpret, and report institutional assessment tools in alignment with

curriculum standards. It was measured through pre- and post-training assessment exercises, simulation activities, and evaluation checklists.

This design allowed the researchers to examine not only the effectiveness of the training program but also the processes, challenges, and teacher engagement strategies that contribute to skill acquisition and operational integration.

The Participants

The study involved 30 PAUD teachers from Desa Cicapar, Ciamis Regency, selected using purposive sampling based on their active involvement in early childhood education programs and willingness to participate in professional development initiatives. The participants represented a range of experience levels, from novice educators (1–3 years) to experienced teachers (10+ years). Table 1 provides a detailed demographic breakdown of the participants.

Table 1. Participant Demographics (*n* = 30)

Variable	Category	Frequency (<i>n</i>)	Percentage (%)
Gender	Female	22	73.3
	Male	8	26.7
Teaching Experience	1–3 years	7	23.3
	4–6 years	10	33.3
	7–10 years	8	26.7
	>10 years	5	16.7
Educational Background	Diploma in Early Childhood Education	12	40.0
	Bachelor’s in Education	18	60.0

The sample size was deemed adequate for practical implementation research, allowing the researchers to provide intensive support, observe teacher performance closely, and facilitate meaningful group interactions during hands-on activities.

Teacher Training Program

The teacher training program was designed as a four-day intensive workshop, combining theoretical instruction with interactive practice. The program was facilitated by university lecturers from STAI Putra Galuh Ciamis and supported by graduate students acting as technical assistants. Activities were organized to enhance pedagogical creativity and standardized assessment competence simultaneously. Table 2 presents the detailed structure of the training program.

Table 2. Teacher Training Program Schedule and Components

Day	Time	Activity	Objective	Mode/Method	Expected Output
1	08:00–12:00	Introduction & Pedagogical Creativity Overview	Orient teachers to creative teaching concepts	Lecture, discussion, group brainstorming	Teacher understanding of creativity principles
	13:00–16:00	Creative Learning Material Design	Develop innovative teaching tools	Hands-on workshop, peer review	Draft instructional materials for PAUD
2	08:00–12:00	Interactive Learning Module Development	Translate creativity into	Workshop, small-group collaboration	Sample lesson modules

				structured lessons			
	13:00–16:00	Peer Feedback & Reflection		Strengthen creativity through collaboration	Peer assessment, reflective journaling		Improved and revised learning materials
3	08:00–12:00	Introduction to Standardized Assessment		Understand assessment tools and standards	Lecture, Q&A		Knowledge of assessment principles
	13:00–16:00	Hands-on Assessment Simulation		Apply assessment tools in practice	Role-play, group exercises		Completed sample assessments
4	08:00–12:00	Integration of Creativity Assessment		Operationalize creative teaching with assessment	Case study analysis, guided practice		Fully developed lesson plan with assessment
	13:00–16:00	Evaluation & Program Wrap-Up		Reflect on learning, provide feedback	Group discussion, individual reflection		Comprehensive participant portfolio

Instruments and Data Collection

The study employed a combination of quantitative and qualitative instruments to measure training outcomes.

- **Observation Rubric for Pedagogical Creativity:** Assessed teachers’ ability to implement creative strategies in lesson planning, instructional delivery, and learning material development. Criteria included originality, adaptability, and student engagement.
- **Assessment Competence Checklist:** Evaluated technical proficiency in administering standardized assessments, including tool selection, accurate scoring, and reporting procedures.
- **Pre- and Post-Training Tests:** Measured knowledge acquisition in creativity principles and standardized assessment procedures.
- **Reflective Journals:** Provided insight into teachers’ perceptions of learning, challenges encountered, and strategies for application in real classrooms.
- **Participant Portfolios:** Contained developed learning materials, lesson modules, and completed assessment exercises, used to triangulate observational data.

Table 3. Data Collection Instruments and Operationalization

Variable	Instrument	Measurement Focus	Data Type	Frequency
Pedagogical Creativity	Observation Rubric	Originality, adaptability, engagement	Quantitative & qualitative	& During workshops
Reflective Journal	Self-perceived creativity and learning	Qualitative	Daily	
Standardized Assessment Competence	Assessment Checklist	Accuracy, tool application, reporting	Quantitative & qualitative	& During simulations
Pre/Post Tests	Knowledge assessment principles	Quantitative	Before & after program	
Integration of Creativity & Assessment	Participant Portfolio	Lesson plans and applied exercises	Qualitative	End of program

Data Analysis

Quantitative data, including pre- and post-training tests and observation scores, were analyzed using descriptive statistics and paired-sample t-tests to determine improvements in creativity and assessment competence. Qualitative data from reflective journals and participant portfolios were analyzed through thematic coding, identifying patterns in teacher engagement, operational challenges, and integration strategies. Triangulation of quantitative and qualitative data provided a comprehensive understanding of training effectiveness, allowing the researchers to identify both measurable improvements and contextual factors influencing teacher performance.

Program Implementation Procedure

The training followed a stepwise operationalization procedure:

- Preparation: Development of workshop materials, assessment rubrics, and schedules aligned with curriculum standards.
- Orientation: Introduction to objectives, expectations, and program logistics.
- Skill-Building: Hands-on sessions for creative material design and interactive module development.
- Assessment Training: Practical exercises simulating standardized assessment procedures.
- Integration: Combining creative instructional strategies with standardized evaluation tools.
- Reflection & Feedback: Group discussions, peer evaluations, and portfolio submission for comprehensive assessment.

Table 4. Program Operationalization and Expected Outcomes

Phase	Activities	Skills Developed	Expected Outcome
Preparation	Material & rubric design	Planning, alignment	Structured workshop framework
Orientation	Program briefing	Awareness, expectation setting	Clear understanding of goals
Skill-Building	Learning material creation	Creativity, instructional design	Drafted and revised learning tools
Assessment Training	Simulation exercises	Technical competence	Applied assessment examples
Integration	Lesson module development	Creativity + assessment	Fully operationalized lesson plan
Reflection & Feedback	Journals & discussion	Self-evaluation, collaborative improvement	Documented improvement in skills

Ethical Considerations

Ethical approval for this study was obtained from the university research committee to ensure adherence to established standards for human subject research. Participation was entirely voluntary, and all teachers provided informed consent after receiving detailed explanations about the study's objectives, procedures, and expected outcomes. Participant confidentiality and data privacy were strictly maintained, with all information anonymized and securely stored. Teachers were informed that observations, assessments, and portfolio evaluations aimed to support professional growth rather than serve evaluative purposes. Constructive feedback was provided throughout the program to enhance pedagogical creativity and assessment competence. Measures were taken to

ensure equitable engagement for teachers of varying experience levels and to promote a supportive, reflective learning environment that upholds the principles of respect, beneficence, and fairness.

RESULTS AND DISCUSSION

RO 1. Operationalizing Teacher Training to Enhance Pedagogical Creativity

The implementation of the teacher training program aimed at enhancing pedagogical creativity in early childhood educators was designed as a structured, immersive, and interactive intervention, grounded in contemporary theories of professional development and constructivist approaches to learning. Pedagogical creativity is operationalized as the capacity of teachers to generate innovative instructional strategies, design engaging learning materials, and adapt teaching techniques to meet the diverse developmental needs of children in early childhood institutions. The importance of this variable is well-documented in the literature, where teacher creativity has been linked to higher student engagement, enhanced problem-solving skills among learners, and the development of critical cognitive and social competencies (McNeill et al., 2025; Suebsing et al., 2024). Despite its importance, prior research demonstrates that many early childhood educators struggle to apply creative pedagogical strategies consistently due to gaps in professional development, limited exposure to hands-on training, and insufficient guidance in translating theoretical knowledge into practical classroom applications (Fernandes, 2024; Shah et al., 2018). The present study operationalizes pedagogical creativity through a comprehensive, participatory teacher training program that emphasizes both conceptual understanding and practical skill acquisition.

The program was conducted for PAUD teachers in Desa Cicapar, Ciamis Regency, Indonesia, selected due to their active role in early childhood education and their representation of semi-urban, rural educational contexts. The selection of this location also provides a relevant context for generalizing findings to similar early childhood education settings in Indonesia, where teachers often encounter resource limitations and diverse learner needs. The program design was guided by principles of experiential learning, where participants were engaged in iterative cycles of planning, implementation, reflection, and peer feedback (Dhiu & Laksana, 2021; Junanto & Utami, 2020). Lecturers from STAI Putra Galuh Ciamis facilitated the program, supported by graduate students acting as technical assistants, ensuring sufficient guidance and scaffolding for participants during each phase of the intervention.

The program consisted of four key phases: orientation and introduction to pedagogical creativity, development of creative instructional materials, construction of interactive learning modules, and reflective sessions integrating feedback from peers and facilitators. Table 1 presents a detailed overview of the training program activities, objectives, and expected outcomes.

Table 5. Teacher Training Program for Enhancing Pedagogical Creativity

Phase	Activity	Objective	Mode/Method	Expected Output
Orientation	Introduction to pedagogical creativity	Build understanding of creative teaching principles	Lecture, discussion	Participant awareness of creative strategies
Instructional Material Development	Hands-on creation of educational tools	Apply creative strategies in material design	Workshop, guided practice	Drafted teaching aids and learning resources
Learning Module Construction	Development of interactive modules	Translate creativity into structured lessons	Group work, collaborative design	Lesson modules with creative approaches

Reflection & Peer Review	Discussion and feedback	and	Enhance understanding through iterative improvement	Peer assessment, journaling	Revised and improved instructional materials
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Data collected during the training were both qualitative and quantitative, designed to measure the enhancement of pedagogical creativity in terms of originality, adaptability, engagement, and alignment with curriculum standards. Observations were systematically conducted using a Pedagogical Creativity Observation Rubric, which evaluated participant engagement, the innovativeness of materials, and the ability to adapt strategies for diverse learner needs. Reflective journals were used to capture participants’ perceptions of the program, the challenges they encountered in material development, and their self-assessed growth in creative teaching competencies. Participant portfolios, including drafted instructional materials and interactive modules, served as tangible evidence of applied creativity. Pre- and post-training assessments provided quantitative measures of knowledge acquisition and self-reported creative confidence.

Analysis of the observation rubric data indicated that participants demonstrated significant growth in the operationalization of pedagogical creativity. Prior to the program, most teachers relied on conventional teaching aids and rote learning activities, with limited incorporation of interactive or exploratory strategies. Post-training observations showed a marked increase in the diversity and originality of instructional materials. Table 2 summarizes the observation rubric scores for key indicators of pedagogical creativity.

Table 6. Observation Rubric Scores for Pedagogical Creativity (*n*=30)

Indicator	Pre-Training (SD)	Mean	Post-Training (SD)	Mean	Improvement (%)
Originality of Materials	2.3 (0.5)		4.1 (0.4)		78.3
Adaptability to Learner Needs	2.6 (0.6)		4.0 (0.5)		53.8
Engagement and Interaction	2.1 (0.4)		4.2 (0.3)		100.0
Alignment with Curriculum	3.0 (0.5)		4.3 (0.4)		43.3

Table 6 presents the observation rubric scores for pedagogical creativity among the 30 participating PAUD teachers, highlighting substantial gains across all measured indicators. The data demonstrate that participants made the most pronounced improvement in engagement and interaction, which increased from a pre-training mean of 2.1 (SD = 0.4) to a post-training mean of 4.2 (SD = 0.3), representing a 100 percent enhancement. This reflects the program’s effectiveness in fostering dynamic classroom practices that encourage active participation and collaborative learning. Similarly, originality of instructional materials showed a notable increase from 2.3 (SD = 0.5) to 4.1 (SD = 0.4), indicating that teachers were able to generate innovative teaching aids that stimulate curiosity and promote problem-solving among children. Adaptability to learner needs improved from 2.6 (SD = 0.6) to 4.0 (SD = 0.5), revealing that participants became more capable of modifying content and instructional strategies to address diverse developmental levels. Alignment with curriculum objectives, while already comparatively higher at baseline (3.0, SD = 0.5), still increased to 4.3 (SD = 0.4), suggesting that teachers could effectively integrate creative methods without compromising educational standards. The quantitative gains are reinforced by complementary qualitative insights drawn from participants’ reflective journals. Teachers reported heightened confidence in designing materials that promote exploration, curiosity, and higher-order thinking skills. They emphasized the value of peer feedback, noting that collaborative evaluation provided exposure to alternative strategies, encouraged critical self-reflection, and fostered iterative improvement of instructional plans. This collaborative environment was instrumental in helping teachers transition from theoretical understanding of creative pedagogy to its practical application in classroom settings.

A key element in operationalizing pedagogical creativity was the development of interactive learning modules, which required teachers to systematically plan, sequence, and structure activities while embedding novel instructional approaches. These modules employed multiple sensory modalities, narrative-based learning, and problem-solving tasks to engage learners cognitively, socially, and emotionally. The process encouraged teachers to experiment with varied teaching techniques, assess their effectiveness, and refine strategies based on peer and facilitator feedback. By constructing these modules collaboratively, participants were able to leverage collective expertise, critique each other’s approaches constructively, and iteratively enhance lesson design to achieve both creativity and pedagogical coherence. Development of interactive learning modules further operationalized pedagogical creativity by requiring teachers to systematically plan and structure activities while integrating novel instructional strategies. These modules incorporated multiple sensory modalities, narrative elements, and problem-solving tasks, aligning with principles of active learning and cognitive engagement (Franks et al., 2025; Park et al., 2017). The collaborative module development process enabled teachers to share expertise, critique approaches, and iteratively improve lesson plans. Table 3 illustrates examples of interactive learning modules developed during the program, demonstrating the tangible integration of innovative strategies into structured lesson plans that align with curriculum standards and developmental objectives.

Table 7. Examples of Interactive Learning Modules Developed

Module Theme	Creative Strategy	Activity Description	Learning Outcome
Numbers & Shapes	Storytelling with manipulatives	Children use colored shapes to build a narrative scene	Enhances conceptual understanding and fine motor skills
Environmental Awareness	Role-play & observation	Students act as “gardeners” to identify plants	Develops observation skills and ecological awareness
Language & Literacy	Song-based learning	Teachers create songs with rhymes to teach letters	Increases vocabulary retention and phonemic awareness
Social-Emotional	Peer Collaboration Challenges	Children complete group tasks to resolve simple conflicts	Builds empathy, communication, and teamwork skills

Table 7 presents examples of interactive learning modules developed by PAUD teachers during the training program, demonstrating the operationalization of pedagogical creativity across multiple thematic areas. The Numbers & Shapes module employed storytelling with manipulatives, allowing children to construct narrative scenes using colored shapes, which fosters conceptual understanding, spatial reasoning, and fine motor skills, consistent with research emphasizing the role of manipulatives in cognitive development (Fonsén & Soukainen, 2020; Hayes et al., 2021). The Environmental Awareness module utilized role-play and observation, where students acted as “gardeners” to explore and identify plants, promoting observational skills, ecological awareness, and experiential learning, which aligns with theories on learning through guided discovery and nature-based pedagogies (Ross & Ascetta, 2025). In Language & Literacy, song-based learning encouraged teachers to create rhymes and musical activities for teaching letters, supporting vocabulary retention, phonemic awareness, and memory consolidation, corroborating findings that music-integrated literacy activities enhance early language acquisition (Archer, 2022; Guo et al., 2017). The Social-Emotional module engaged children in peer collaboration challenges, emphasizing teamwork, communication, and empathy development, reflecting evidence that structured collaborative tasks promote socio-emotional competencies in early childhood settings (Gingras et al., 2025; Leggett, 2017).

The integration of hands-on exercises, creative material development, and structured module planning reflects the operationalization of pedagogical creativity, moving beyond theoretical

instruction to tangible skill acquisition. This approach aligns with literature emphasizing that creativity in teaching is most effectively cultivated through experiential, collaborative, and reflective professional development, which encourages iterative experimentation and adaptation (Aljabreen, 2020). Furthermore, the program incorporated iterative feedback loops, where lecturers and peer participants evaluated materials using predefined criteria for creativity, learner engagement, and curriculum alignment. This reflective component facilitated critical self-assessment and peer-supported improvement, enabling teachers to internalize creative pedagogical principles and independently design lessons that are both innovative and developmentally responsive (Dhiu & Laksana, 2021; Franks et al., 2025). Analysis of feedback indicated that participants not only enhanced the originality and engagement of their instructional strategies but also developed a more nuanced understanding of how to integrate creativity with curricular objectives, bridging the gap between theory and practical classroom application.

Contextually, the study setting in Desa Cicapar provided a representative rural and semi-urban environment where teachers often face resource limitations and diverse learner profiles. Conducting the program in this context enabled the researchers to observe the practical application of creative strategies under real-world constraints, offering insights into program scalability and transferability to similar early childhood education settings in Indonesia. The involvement of university lecturers and student assistants facilitated mentorship, technical support, and scaffolding, ensuring that participants could translate conceptual knowledge into operational practices effectively.

RO 2. Operationalizing Standardized Assessment Practices in Teacher Training

The second objective of this study centers on the operationalization of standardized assessment practices within the teacher training program for PAUD teachers. Standardized assessment, in this context, is defined as the systematic, reliable, and curriculum-aligned evaluation of student learning outcomes, development, and progress. The importance of standardized assessment in early childhood education is extensively documented. Research emphasizes that accurate and consistent assessment allows teachers to monitor developmental milestones, inform instructional decisions, and ensure that learning activities meet established educational standards (Barbu et al., 2015; Bird & Charteris, 2021). Despite its significance, many early childhood educators struggle to implement assessment tools effectively due to limited exposure to operational guidance, unfamiliarity with assessment procedures, and a lack of hands-on practice in authentic classroom conditions (Ahtiainen et al., 2021). These challenges underscore the necessity of training programs that provide both conceptual understanding and practical application of standardized assessment techniques.

In operationalizing this objective, the teacher training program was designed to integrate knowledge acquisition, skill-building, and reflective practice in a structured and participatory manner. The program included lectures on the principles and purposes of standardized assessment, guided exercises on administering institutional assessment tools, hands-on simulations of assessment scenarios, and collaborative workshops on recording and reporting results. University lecturers facilitated these activities, supported by graduate students who assisted in the practical exercises, providing scaffolding, clarifications, and feedback to participants. Table 1 illustrates the structure and operational components of the assessment training within the program.

Table 8. Standardized Assessment Training Program Components

Phase	Activity	Objective	Mode/Method	Expected Output
Introduction	Principles standardized assessment	of Build foundational knowledge assessment concepts	Lecture, of discussion	Teacher understanding of assessment rationale and standards

Tool Familiarization	Overview of institutional assessment instruments	Enable familiarity with assessment tools	Hands-on demonstration, guided exploration	Teachers identify and understand assessment components
Simulation	Administering assessments in role-play scenarios	Apply assessment procedures in practice	Role-play, peer assessment	Completed mock assessments and scoring sheets
Data Recording & Reporting	Documentation of results	Develop accurate recording and reporting skills	Workshop, guided exercises	Correctly filled assessment templates aligned with curriculum
Reflection & Feedback	Analysis of practice outcomes	Identify challenges and areas for improvement	Journaling, group discussion	Reflective insights and improved operational skills

The operationalization of standardized assessment in the program relied on quantitative and qualitative data collection methods to evaluate teacher competence. Observation rubrics were employed to monitor accuracy in applying assessment tools, adherence to standardized protocols, and consistency in scoring. Pre- and post-training tests assessed knowledge acquisition regarding assessment principles, tool selection, and administrative procedures. Additionally, participant portfolios, containing completed assessment templates and reports, provided concrete evidence of applied skills. Reflective journals captured participants’ perceptions of their competency, challenges encountered, and strategies for overcoming difficulties in assessment practice.

Table 9. Data Collection Instruments for Standardized Assessment Competence

Variable	Instrument	Measurement Focus	Data Type	Frequency
Assessment Competence	Observation Rubric	Accuracy, procedural adherence, scoring consistency	Quantitative & qualitative	During simulations
	Pre/Post Test	Knowledge of principles, procedures, reporting	Quantitative	Before & after program
	Participant Portfolio	Completed assessments and reports	Qualitative	End of program
	Reflective Journal	Self-perceived challenges and operational understanding	Qualitative	Daily

Quantitative results from the observation rubric demonstrated substantial improvement in participants’ ability to operationalize standardized assessment procedures. Prior to the program, many teachers exhibited inconsistent scoring, incomplete documentation, and uncertainty in tool selection. Post-training observations indicated a marked increase in accuracy, procedural adherence, and reliability of recorded results. Table 3 summarizes the aggregated observation scores for key indicators of assessment competence.

Table 10. Observation Scores for Standardized Assessment Competence (*n*=30)

Indicator	Pre-Training (SD)	Mean	Post-Training (SD)	Mean Improvement (%)
Procedural Accuracy	2.4 (0.5)		4.2 (0.4)	75.0
Tool Selection	2.7 (0.6)		4.1 (0.5)	51.9
Scoring Consistency	2.2 (0.5)		4.3 (0.3)	95.5
Documentation & Reporting	2.6 (0.5)		4.0 (0.4)	53.8

The qualitative data further reinforced these findings. Participants consistently reported enhanced confidence in applying assessment procedures and greater clarity in interpreting results.

Reflective journal entries highlighted that hands-on simulations, combined with iterative feedback from lecturers and peers, were particularly effective in bridging the gap between theoretical understanding and practical execution. Teachers also emphasized that learning in collaborative groups allowed them to observe different approaches to problem-solving, promoting adaptability and reinforcing correct practices.

To operationalize the integration of standardized assessment within actual instructional planning, teachers were tasked with developing lesson modules that combined creative pedagogy with assessment components. This exercise enabled participants to see the interplay between engaging instructional strategies and systematic evaluation. Learning modules incorporated measurable objectives, assessment checkpoints, and documentation procedures aligned with curriculum standards, demonstrating the feasibility of embedding assessment within everyday teaching practices. Table 4 provides examples of lesson modules that integrated standardized assessment.

Table 11. Examples of Learning Modules with Integrated Standardized Assessment

Module Theme	Creative Activity	Assessment Component	Assessment Method	Learning Outcome
Numeracy	Shape-based storytelling	Counting accuracy and pattern recognition	Checklist & observation	Cognitive development and numerical skills
Language	Song-based phonics	Letter recognition and pronunciation	Oral test & rubric	Literacy development
Social-Emotional	Cooperative play	Peer interaction and problem-solving	Observation rubric	Social competence and empathy
Science	Gardening simulation	Observation and classification of plants	Portfolio & guided worksheet	Scientific inquiry skills

This operational approach aligns with theoretical frameworks emphasizing experiential learning, reflective practice, and constructivist pedagogy (Tzuriel, 2021). By situating standardized assessment within the context of creative instructional practices, teachers were able to internalize assessment as an integral part of their pedagogy rather than as a separate administrative task. The contextual setting of Desa Cicapar, Ciamis Regency, provided a representative environment for observing practical application under real-world conditions, where resource limitations and diverse learner profiles pose authentic challenges to teachers' assessment competence. The involvement of university lecturers and student assistants ensured that participants received immediate guidance, feedback, and scaffolding during exercises, facilitating the transfer of skills from training to practice.

To confirm, the findings from the implementation of the teacher training program reveal that PAUD teachers demonstrated substantial growth in both pedagogical creativity and the practical application of standardized assessment practices. Participants showed increased confidence and competence in designing innovative learning materials, developing interactive lesson modules, and engaging students through diverse instructional strategies, indicating that structured, hands-on training effectively strengthened creative teaching skills. Simultaneously, teachers improved their ability to administer, document, and interpret standardized assessment tools, ensuring alignment with curriculum requirements and more consistent evaluation of student learning outcomes. Despite these advancements, certain challenges persisted. Variations in prior teaching experience influenced the pace at which teachers adopted new strategies, and some participants required repeated guidance to fully integrate assessment procedures within creative lesson plans. Additionally, resource limitations and occasional uncertainties in balancing creativity with assessment rigor highlighted contextual constraints that can affect program implementation. Collectively, the results underscore the importance of immersive, collaborative, and reflective professional development programs that not

only enhance instructional innovation but also operationalize systematic evaluation, suggesting that sustained mentorship, differentiated support, and iterative practice are crucial for consolidating these competencies in early childhood education settings.

CONCLUSION

The implementation of the teacher training program successfully enhanced both pedagogical creativity and the operational application of standardized assessment practices among PAUD teachers, reflecting significant improvement in instructional innovation, learner engagement, and accuracy in evaluating student outcomes. Positive insights revealed that hands-on workshops, collaborative module development, and reflective exercises effectively facilitated skill acquisition, while active guidance from university lecturers and peer feedback reinforced participants' confidence and ability to translate theoretical knowledge into practical classroom strategies. However, challenges emerged, including variations in teachers' prior experience, initial hesitancy in adopting novel instructional methods, and occasional difficulties in aligning assessment procedures with curriculum standards, highlighting contextual constraints that may influence the consistency of program impact. The findings underscore the critical role of structured, participatory professional development programs in fostering sustainable instructional innovation and rigorous evaluation practices in early childhood education. Implications extend to policy and practice, suggesting that higher education institutions can play a strategic role in bridging pedagogical theory and applied teaching while promoting continuous teacher learning. Future programs should consider differentiated training strategies, extended mentorship, and integration of digital tools to support scalable and contextually adaptable professional development initiatives in diverse educational settings.

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