



Assesing Early Childhood Drawings: Instrument Development for Children Aged 4-5

Niken Caesanda Rizqi*, Mufidah, Rini Agustiningasih

Early Childhood Education, Universitas Negeri Yogyakarta, Indonesia.

Correspondence: E-mail: nikencaesanda.2025@student.uny.ac.id

ABSTRACT

This study aims to develop and validate an assessment instrument for evaluating drawing skills in children aged 4–5 years within early childhood education settings. This study employed a Research and Development approach using the Four-D (4D) model consisting of Define, Design, Develop, and Disseminate stages. The define stage involved a needs analysis through teacher interviews, while the design stage produced an initial instrument based on seven indicators of artistic development. The develop stage included expert validation followed and a small-scale trial involving 10 children aged 4–5 years. The results indicate that the developed instrument is feasible and valid, with an overall eligibility score of 83%, categorized as appropriate for use. In the disseminate stage, the instrument was introduced to early childhood educators in partner institutions, showing positive responses in terms of usability and practicality. This study offers novelty by providing a structured assessment instrument that integrates multiple aspects of artistic development, emphasizing not only the final product but also the creative process and symbolic representation in children's drawings. The findings suggest that the instrument can support teachers in conducting more systematic, objective, and authentic assessments. Therefore, this study contributes to improving assessment practices in early childhood education by providing a practical tool that facilitates better identification and monitoring of children's artistic development.

ARTICLE INFO

Article History:

Submitted/Received 28 Feb 2026

First Revised 27 Mar 2026

Accepted 26 Apr 2026

First Available online 09 May 2026

Publication Date 01 May 2026

Keyword:

4D model,

Assessment instrument,

Drawing skills,

Early childhood,

Validity.

1. INTRODUCTION

Early Childhood Education Institutions (PAUD) play a strategic role in providing holistic educational services. This role encompasses six developmental aspects, one of which is artistic development (Henny et al., 2023). Artistic development is considered an integrated aspect of all primary aspects. One activity to enhance artistic development in early childhood, such as drawing, can enhance fine motor skills, cognitive skills, creativity, and self-expression (Arifin et al., 2023). Therefore, fostering artistic development is essential in early childhood education.

Drawing in the context of early childhood is the most dominant art activity used in early childhood education institutions. Drawing is a form of spontaneous expression and a natural process in child development. This activity is a manifestation of the earliest nonverbal expression in childhood (Gil-Ruiz et al., 2025). Children's drawings can be analyzed through their visual expressions to describe the characteristics of the images produced (Hidayah & Furnamasari, 2025). These nonverbal expressions then can be used as data sources for teachers in conducting assessments. Furthermore, children's drawings reflect their developmental stages and can be analyzed to understand the progression of their cognitive, visual, and representational abilities (Gil-Ruiz et al., 2025).

Assessment is one of the key approaches used to measure children's development (Hariyani et al., 2023). Through assessment, teachers can identify developmental progress, detect learning difficulties, and provide appropriate interventions childhood (Gil-Ruiz et al., 2025). In Indonesia, assessment standards for early childhood education are regulated under Regulation of the Minister of Education and Culture of the Republic of Indonesia No. 137 of 2014. Furthermore, assessment in the independent curriculum is a key element of the learning process and facilities (Maulida et al., 2025). Therefore, it is understandable that teachers need to coordinate with relevant experts regarding standardized measurement tools as part of the developmental intervention process.

However, in practice, the implementation of assessment in early childhood education still faces various challenges. The administrative burden on teachers remains a widespread issue, limiting their ability to develop and implement assessment instruments effectively. Teachers play a central role in shaping classroom interactions and learning environments, and their beliefs and competence significantly influence the effectiveness and creativity of teaching practices (Nordin et al., 2023). Previous findings indicate that 56% of teachers still have low competence in documenting children's learning experiences (Puspitasari et al., 2021). In addition, institutional support in providing assessment instruments is relatively low, reaching only 60.3%, which suggests that assessment practices have not been implemented optimally. This finding is consistent with other studies indicating that one of the main challenges in assessment implementation lies in the application of appropriate assessment techniques (Novianti., et al, 2022). These conditions highlight the need for some structured and practical assessment approaches in early childhood education.

Assessment plays a crucial role in measuring child development, fulfilling several purposes, such as designing learning, conducting effective communication, identifying children's needs and early detection, and providing an overview of the effectiveness of learning programs (Hafizi et al., 2025). These assessment objectives can be observed in drawings to assess children's artistic development. Drawings are a form of two-dimensional art that can be used as a benchmark or assessment of works of expression (Prayitno, 2021). Observed elements serve as sources for assessment, such as lines as aspects of plane and shape, and colors, which result from the process of mixing primary and secondary colors.

Challenges remain in implementing valid and accurate assessment instruments to evaluate the artistic development of children aged 4-5 years. Teachers must have an understanding of the child's developmental milestones when assessing the child. They are required to be able to differentiate between the child's developmental milestones. Understanding how children progress through these milestones is essential, as it provides insight into whether a child is developing typically or may need early intervention to address potential delays (Dass et al., 2024). The quality of the assessment is determined by the teacher's assessment results, which determine when a child has achieved the expected developmental milestones and when they are still at a suboptimal stage.

Despite its importance, existing assessment practices still face limitations, particularly in the availability of valid and systematic instruments to evaluate children's artistic development. Assessment often focuses on the final product rather than the creative process and lacks comprehensive indicators that reflect children's developmental characteristics. This indicates a gap in the development of assessment instruments that are specifically designed for evaluating children's drawings, especially for those aged 4-5 years.

Based on these issues, this study aims to develop and validate an assessment instrument for children's drawing-based artistic development for children aged 4-5 years. This study offers novelty by developing a structured assessment instrument that integrates seven key indicators of artistic development, emphasizing not only the final product but also the creative process and symbolic representation in children's drawings. Unlike existing practices that tend to focus on general or product-based evaluation, this instrument provides clear and measurable indicators that are specifically to be practically applicable in PAUD settings and to support teachers in conducting more systematic, objective, and comprehensive assessments. Therefore, this study contributes improving assessment practices in early childhood education by providing a valid, practical, and developmentally appropriate tool for evaluating children's artistic growth.

2. METHODS

This study using a Research and Development (R&D) approach aimed at developing a valid and practical assessment instrument for evaluating children's drawings for children aged 4-5 years. The development process followed the Four-D (4D) model originally proposed by Thiagarajan, consisting of four stages: define, design, develop, and disseminate, and widely used in recent educational research (Baga et al., 2024). The define stage focused on identifying the fundamental needs for developing the assessment instrument through curriculum analysis related to artistic development competencies and characteristics of children aged 4-5 years, as well as identifying problems in current drawing assessment practices in PAUD. The design stage involved constructing the initial prototype of the instrument, including developing a blueprint based on indicators of artistic development, formulating assessment items, determining the rating scale using a Likert scale (1-4), and designing the instrument through expert validation and limited trials. Finally, the disseminate stage involved distributing the developed instrument to partner with other PAUD institutions and publishing the research findings (Prasetyo, 2024).

The instrument developed in this study consisted several indicators of children's artistic development, including fine motor skills, visual expression, creativity, originality, understanding of form, and the use of colour. Data were collected through observation of children's drawings, which were assessed by teachers acting as raters using the developed instrument. Each indicator was measured using a rating scale forms 1 to 4, representing levels of development from low to high. The collected data were analyzed using descriptive

quantitative techniques by calculating the percentage of scores obtained to determine the validity and practicality of the instrument.

To ensure the validity of the instrument, expert judgment was conducted involving experts in early childhood education, assessment, and children's art. The validation process assessed several aspects, including content validity, construct validity, language clarity, and the suitability of indicators with children's developmental characteristics. The results of the expert validation were analyzed using percentage criteria to determine the level of validity of the instrument.

3. RESULTS AND DISCUSSION

The development of an assessment instrument for early childhood art, particularly drawing, is essential due to the limited availability of structured and valid tools that can comprehensively capture children's artistic development. In many early childhood education settings, assessment practices tend to rely on general observations without standardized indicators, resulting in less objective and less detailed evaluations. Moreover, children's drawings, as a form of nonverbal expression, contain rich developmental information that is often not optimally utilized. Therefore, this study aims to develop and validate an assessment instrument that can support teachers in systematically evaluating the artistic development of children aged 4-5 years.

This study was conducted following the 4D development model, consisting of the define, design, develop, and disseminate stages. In the define stage, the findings revealed that although teachers frequently implement drawing activities, most of them do not use specific and standardized criteria to assess children's drawings. Teachers also reported limited knowledge and experience in conducting structured assessments, resulting in evaluations that are less comprehensive and tend to focus only on observable outcomes.

In the design stage, an initial prototype of the assessment instrument was developed based on seven indicators of children's artistic development, including fine motor skills, visual elements, detail and observation, creativity, originality, visual communication, and media exploration. In the develop stage, the instrument was validated by expert judgment involving specialists in early childhood education, art development, and assessment, followed by a limited trial with 10 children aged 4-5 years. The results indicated that the instrument achieved an overall validity level of 83%, categorized as feasible and appropriate for use. In the disseminate stage, the validated instrument was distributed to partner PAUD institutions and introduced to teachers as a practical tool to support more systematic and authentic assessment of children's drawings.

Based on these needs, the instrument was designed using seven key indicators of artistic development, including fine motor skills (FMS), visual elements or colour (VE), detail and observation (DO), creativity and visual ideas (CVI), originality and freedom (OF), visual communication (VC), and media exploration (ME), as presented in Table 1 below. These indicators reflect a holistic perspective of children's artistic development, integrating motor, cognitive, and expressive dimensions. The inclusion of these aspects ensures that the instrument do not merely assess the final product, but also captures the developmental processes underlying children's drawing activities.

Table 1. Indicators and aspects of artistic development of children's drawings aged 4-5 years

Aspects	Indicators	Code	Number	Scale (Rubric)
Fine Motor Skills	Holding the drawing tools correctly	FMS	1	1-4
Visual Elements	Using colour on the artwork	VE	2	1-4
Detail and Observation	Draw objects according to the observed details	DO	3	1-4
Creativity and Visual Ideas	Drawing according to personal ideas	CVI	4	1-4
Originality and Freedom	Get creative and drawing freely	OF	5	1-4
Visual Communication	Communicating the artwork	VC	6	1-4
Media Exploration	Try 2-3 art media	ME	7	1-4

The developed instrument was then validated through expert judgment involving specialists in early childhood education, art development, and assessment, as well as practitioners from PAUD institutions on **Table 2** below. Overall, the instrument obtained a mean score of 3.83, which falls into the “very appropriate” category. The highest scores were observed in the aspects of content, construction, and language, indicating that the instrument is well-structured and aligned with children’s developmental characteristics. However, the usability aspect received slightly lower score, suggesting the need for minor revisions.

Based on the validator’s feedback, improvements were made in refining wording and enhancing clarity. The validator also indicated that the instrument can be used with minor revisions, consisting its feasibility for implementation. The validation results indicated that the instrument was generally appropriate in terms of content, clarity, and relevance to children’s developmental characteristics. Revisions were made based on expert feedback, particularly in improving the clarity of language, adjusting the level of difficulty of indicators, and refining the scoring rubric to better align with children’s developmental stages.

Table 2. Expert validation’s result of the instrument

Aspect	Indicator Count	Score	Mean	Category
Content Validity	2	8	4.00	Very Appropriate
Construction	1	4	4.00	Very Appropriate
Language	2	8	4.00	Very Appropriate
Usability	1	3	3.00	Appropriate
Overall	6	23	3.82	Very Appropriate

Following the revision process, the instrument was subsequently tested in a limited trial involving 10 children aged 4-5 years, assessed by a teacher using the revised instrument. The instrument consists of seven assessment indicators, each equipped with a four-level rating scale to represent children’s developmental progression. The revised version of the instrument used in this development testing stage is presented in **Table 3** below, which illustrated the final structure of the assessment instrument.

Table 3. Revision of the drawing assessment instrument for 4-5 years

No	Indicator	Scale				
		1	2	3	4	
1	Fine Motoric Skills	Holding the drawing tools (pencil, crayon, paintbrush, marker) correctly	Children do not hold the drawing tools firmly yet.	Children can hold the drawing tools on their own way.	Children can hold the drawing tools between 3 fingers.	Children are skilled to hold the drawing tools between 3 fingers.
2	Visual Element	Using colour on the artwork	Children do not know how to colouring and recognizing colour on their artworks yet.	Children still have limitation in recognizing colours on their artworks.	Children can recognize and using colour on their artworks.	Children recognize and using colour on their artworks properly.
3	Detail & Observation	Draw objects according to the observed details	Children draw objects still in the form of scribbles	Children draw object but not in detail	Children can draw detailed object like what they observed.	Children improve their own drawing like what they observed.
4	Creativity and Visual Ideal	Drawing according to personal ideas	Children do not have their own idea to draw object	Children trying to draw objects on their own idea but not on the original form.	Children trying to draw on their own idea.	Children add details to their drawing and explaining their artwork.
5	Originality and Freedom	Get creative and drawing freely	Children always imitate other people's drawing	Children sometimes still imitate other people's drawing	Children trying to draw as creative and freely	Children trying to draw by exploring colours
6	Visual Communication	Communicating their artwork	Children have not yet communicated their artwork	Children still stutters when communicating about their artwork	Children was guided to communicate their artwork	Children can communicate about their artworks coherently
7	Media Exploration	Try 2-3 art media (crayon, paint, clay)	Children are not yet interested in trying various media (crayon, paint, clay)	Children start to be interested in trying with limited media (only 1 media)	Children try to use 2-3 art media	Children try to experiment and explore using various media

Furthermore, a limited trial was conducted involving 10 children aged 4-5 years, assessed by a teacher using the revised instrument, as presented in **Figure 1** below. The results of the trial were analyzed and visualized to examine the distribution of assessment categories across all indicators. The findings showed that the majority of the scores fell into the "Very Appropriate" (43%) and "Appropriate" (40%) categories, resulting in a total positive percentage of 83%. This indicates that the instrument has a good level of validity and is capable of capturing children's artistic development consistently.

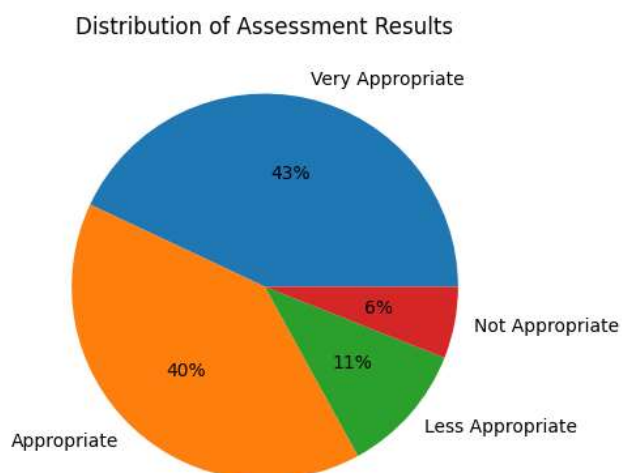


Figure 1. Pie chart of development trial results

Although a small proportion of the results fell into the “Less Appropriate” (11%) and “Not Appropriate” (6%) categories, these findings do not significantly affect the overall validity of the instrument. Instead, they highlight specific aspects that may require further refinement. Overall, the results demonstrate that the developed instrument meets the feasibility criteria for use in assessing the artistic development of children age 4-5 years in early childhood education.

The findings of this study also confirm that children’s drawing abilities develop gradually and reflect their cognitive, motor, and emotional development. At this stage, children transition from random scribbling to more structured and meaningful representations such as human body parts like head, hand, feet (Podobnik et al., 2024). In particular, some children demonstrate a visual drawing type, which prioritizes previously observed objects and depicts real-life experiences. This tendency indicates that children rely on visual memory when constructing their drawings, suggesting relatively well-developed memory and observational abilities (Hidayah & Furnamasari, 2025). This process aligns with previous studies indicating that children’s drawings serve as a form of visual thinking and nonverbal communication, reflecting their understanding of objects, experiences, and symbolic representations in childhood (Gil-Ruiz et al., 2025). As children’s fine motor coordination improves, their ability to control lines, shapes, and proportions also becomes more refined.

In addition, the results highlight the importance of environmental stimulation and the use of diverse media in supporting children’s artistic development. The stimulation including using digital media for children to observe any kind of artworks and how it is shaped, coloured, and illustrated (Alam & Sunarto, 2024). The use of various tools such as crayons, coloured pencils, watercolour, and finger painting provides rich sensory experiences that enhance children’s creativity and engagement (Hardiyanti et al., 2025; Haya et al., 2025). Children can be taught to use airbrush technique to improve their artwork, such as shadow, colour gradation, and visual texture (Adha & Mayar, 2024). These findings are consistent with previous research showing that multisensory experiences contribute significantly to the development of creativity, visual flexibility, and fine motor skills in early childhood (Kalamak et al., 2022).

Moreover, the ability of children to explain their drawings indicates the development of visual communication and symbolic thinking. Children not only produce visual forms but also construct meaning and narratives through their drawings. This supports the view that drawing is closely related to language development, conceptual organization, and social-emotional

expression (Fabris et al., 2023). Therefore, assessing children's drawing should not be limited to visual outcomes but should also consider the underlying cognitive and expressive processes.

Overall, this study demonstrates that the developed assessment instrument is both valid and practical for evaluating children's artistic development. The instrument provides a more structured and comprehensive approach to assessment, enabling teachers to identify children's developmental progress more accurately. In addition, it serves as pedagogical tool that can support reflective teaching practices and improve the quality of art learning in early childhood education.

4. CONCLUSION

This study developed an assessment instrument for evaluating the artistic development of children's drawings aged 4-5 years, based on seven indicators: fine motor skills, visual elements, detail and observation, creativity, originality, visual communication, and media exploration. The instrument was developed using the 4D model and was validated through expert judgment and limited trials. The results showed a feasibility level of 83% within the "Appropriate" and "Very Appropriate" categories, indicating that the instrument is valid and feasible for use.

The findings highlight that drawing assessment should consider not only the final product but also the process, expression, and symbolic representation of children. The instrument can support teachers in conducting more structured and meaningful assessments in early childhood education. However, this study has several limitations, including a small sample size and the use of a single rater which may affect the generalizability and reliability of the results. Therefore, future research is recommended to involve larger samples, multiple raters, and broader implementation contexts. Overall, this study contributes by providing a structured and validated assessment instrument that supports more comprehensive and authentic evaluation of children's artistic development.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

6. REFERENCES

- Adha, A. E. F., and Mayar, F. (2024). The influence of airbrush drawing on children's artistic abilities at Lukmanul Hakim Sungai Penuh kindergarten. 7(1), 80–89. <http://Journal.Radanitan.ac.it/Index.pf/AI-Atpal>
- Alam, S., and Sunarto, S. (2024). The role of youtube-based drawing in early childhood social-emotional development. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 8(2), 403–414. <https://doi.org/10.31004/obsesi.v8i2.5506>
- Arifin, I. N., Abduh, I. B., dan Juniarti, Y. (2023). Pengaruh media realia terhadap kemampuan menggambar pada anak usia dini kelompok B. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 7(5), 6472–6482. <https://doi.org/10.31004/obsesi.v7i5.5265>

- Baga, S., Hasanah, U., and Astra, I. M. (2024). Development of problem-based electronic comics on environmental pollution subject. *Jurnal Penelitian Dan Pembelajaran IPA*, 10(2), 270. <https://doi.org/10.30870/jppi.v10i2.25422>
- Dass, R. S., Ghorpade, M. D., Rajamani, S., Varadharasu, Si. D., Saxena, M., and Contractor, Y. (2024). Exploring growth and developmental milestone in preschool children: a comprehensive review. *African Journal of Biomedical Research*, 664–668. <https://doi.org/10.53555/ajbr.v27i4s.3657>
- Fabris, M. A., Lange-Küttner, C., Shiakou, M., and Longobardi, C. (2023). Editorial: Children's drawings: evidence-based research and practice. In *Frontiers in Psychology* (Vol. 14). Frontiers Media SA. <https://doi.org/10.3389/fpsyg.2023.1250556>
- Gil-Ruiz, P., Martinez-Verez, V., Ospina Toro, W., and Castañeda Marulanda, W. (2025). Children's drawing and graphic development: An empirical study of the developmental stages according to lowenfeld. *Education Sciences*, 15(6). <https://doi.org/10.3390/educsci15060681>
- Hafizi, D., Ubabuddin, U., Ramadhan, A. F., Khalil, M. A., and Aditya, F. (2025). Assessment in early childhood education: A literature review. *AlBanna: Jurnal Pendidikan Islam Anak Usia Dini*, 5(1), 42–50. <https://doi.org/10.24260/albanna.v5i1.4669>
- Hardiyanti, W. D., Prayitno, and Pamungkas, J. (2025). Analysis of fine art learning to stimulate creativity in kindergarten. *Aulad: Journal on Early Childhood*, 8, 2655–433. <https://doi.org/10.31004/aulad.v8i3.1259>
- Hariyani, I. T., Sulistiyani, S., and Soemarmi, S. (2023). Implementation of the Independent curriculum for PAUD school readiness. *Cakrawala Dini: Jurnal Pendidikan Anak Usia Dini*, 14(2), 99–108. <https://doi.org/10.17509/cd.v14i2.61941>
- Haya, A. F., Ahmad, A., Purnamasari, D. P., Aliya, L., and Musfidah, U. L. (2025). Fostering early childhood creativity through finger painting activities: A case study. *JCR*, 2(3), 89–97. <https://doi.org/10.21107/njcr.v2i3.140>
- Henny, H., Saleh, R., Marwah, M., Kurniati, A., dan Suhardin, N. (2023). Stimulasi perkembangan aspek seni anak usia dini. *Generasi Emas: Jurnal Pendidikan Islam Anak Usia Dini*, 6(1), 68-76.
- Hidayah, N., and Furnamasari, Y. F. (2025). Expression of children's drawings with creative methods using animated video media. *Cakrawala Dini: Jurnal Pendidikan Anak Usia Dini*, 16, 85–96. <https://doi.org/10.17509/cd.v16i1.83999>
- Kalamak, J. T., Yaku Danga, S., and Rahma Sari, N. (2022). Finger painting to improve fine motor skills of early age children. <https://jurnal.staiyastispadang.ac.id/index.php/JIECE/index>
- Maulida, C., Tm, R., dan Fitriani, D. (2025). Analisis implementasi asesmen formatif dalam pembelajaran berdiferensiasi pada Raudhatul Athfal. *Murhum: Jurnal Pendidikan Anak Usia Dini*, 6(1), 432–444. <https://doi.org/10.37985/murhum.v6i1.1262>

- Nordin, N., Ghazali, M., Radzali, N. F. J., Hashim, N. H., and Chear, S. L. S. (2023). Validity and reliability of pre-service teacher competency level in teaching early mathematics instrument using the rasch model. *Cakrawala Dini: Jurnal Pendidikan Anak Usia Dini*, 14(2), 139–148. <https://doi.org/10.17509/cd.v14i2.63683>
- Podobnik, U., Jerman, J., and Selan, J. (2024). Understanding analytical drawings of preschool children: The importance of a dialog with a child. *International Journal of Early Years Education*, 32(1), 189–203. <https://doi.org/10.1080/09669760.2021.1960802>
- Prasetyo, K. D. D. (2024). Instagram-based infographics on the transitional period to the new order, 1965-1966: Enhancing learning interest among students at Ungaran public high school. *Indonesian Journal of History Education*, 9(2), 119-154. <https://doi.org/https://doi.org/10.15294/ijhe.v9.i2.11090>
- Prayitno. (2021). Tolok ukur penilaian ekspresi gambar anak usia dini usia 4-6 tahun. *Jurnal Pendidikan Anak*, 10(1), 88–96.
- Puspitasari, E., Novianti, R., dan Zulkifli, N. (2021). Pengembangan sistem penilaian pembelajaran PAUD melalui aplikasi SAKA. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 6(3), 1346–1356. <https://doi.org/10.31004/obsesi.v6i3.1726>