

Design of Authentic Assessment Based on Self-Reflection as an Instrument for Measuring Learner-Centered Learning Outcomes

Ahmad Kurniawan¹, Alipudin Suhendra², Margiyanto³

^{1,2,3}Department of Elementary School Teacher Education, PGRI Adi Buana University, Surabaya, Indonesia

**Corresponding author email: kurniawan.ah@gmail.com*

Article Info

Article history:

Received May 15, 2026

Approved June 20, 2026

ABSTRACT

This study aims to develop and validate a self-reflection-based authentic assessment instrument as a tool for measuring learning outcomes that supports the implementation of learner-centered learning. The research employed a Research and Development (R&D) approach using the ADDIE model, which consists of the stages of analysis, design, development, limited implementation, and evaluation. The developed product comprises three integrated components: contextual problem-based authentic tasks, an analytical performance assessment rubric, and a self-reflection worksheet. Product validation was conducted by three validators consisting of an educational evaluation expert, a curriculum and learning expert, and an educational practitioner. Data were analyzed using Aiken's V index to determine the content validity of the instrument. The results showed that the developed instrument achieved an average Aiken's V score of 0.89, indicating a very high level of validity. The instrument demonstrated strong alignment with learning outcomes, clarity of assessment indicators, measurability of the rubric, readability of the instrument, and consistency with learner-centered learning principles. The integration of self-reflection into authentic assessment enables students not only to demonstrate learning outcomes but also to evaluate their own learning processes, thereby fostering metacognitive awareness and self-regulated learning skills. These findings suggest that the developed instrument has the potential to serve as an alternative assessment system that is more holistic, meaningful, and relevant to the demands of 21st-century learning than conventional assessments that focus primarily on final outcomes.

Keywords: Authentic Assessment, Self-Reflection, Learner-Centered Learning, Learning Outcomes, Self-Regulated Learning.

Copyright © 2026, The Author(s).

This is an open access article under the CC-BY-SA license



How to cite: Kurniawan, A., Suhendra, A., & Margiyanto. (2025). Design of Authentic Assessment Based on Self-Reflection as an Instrument for Measuring Learner-Centered Learning Outcomes. *Journal of Educational Innovation and Transformation Global*, 2(1), 109–116. <https://doi.org/10.55681/jeitg.v2i1.199>

INTRODUCTION

The transformation of twenty-first-century education has driven fundamental changes in how learning is designed, implemented, and evaluated. The shift from teacher-centered learning to learner-centered learning positions students as active agents who construct

knowledge through experience, interaction, and reflection on their learning processes. Within this paradigm, learning success is no longer measured solely by the ability to recall information but also by the ability to apply knowledge, solve problems, think critically, collaborate effectively, and reflect independently on learning experiences (OECD, 2023; UNESCO, 2024; Darling-Hammond et al., 2020). These changes require assessment systems capable of capturing the complexity of student learning outcomes more comprehensively than traditional measurement models that focus primarily on final learning results.

Despite various educational reforms promoting learner-centered learning, assessment practices in many educational institutions remain dominated by standardized test-based summative assessments. Such assessment models tend to measure lower-order cognitive abilities, such as remembering and understanding information, and therefore provide limited insight into students' abilities to apply knowledge in authentic situations or develop higher-order thinking skills (McArthur, 2023; OECD, 2023; Villarroel et al., 2020). Furthermore, an excessive emphasis on final grades often fosters a grade-oriented learning culture rather than the development of deep understanding. This situation creates a gap between the objectives of twenty-first-century learning and assessment practices that continue to focus narrowly on academic achievement (UNESCO, 2024; Ajjawi et al., 2020).

In response to these limitations, authentic assessment has increasingly been recognized as a relevant approach for measuring learning outcomes in a more meaningful manner. Authentic assessment places students in situations that resemble real-life contexts, requiring them to integrate knowledge, skills, and attitudes to address complex tasks or problems (Wiggins, 1998; Quinlan et al., 2024; McArthur, 2023). This approach evaluates not only what students know but also how they apply that knowledge in relevant contexts. Numerous studies have demonstrated that authentic assessment can enhance student engagement, critical thinking, and the relevance of learning to real-world needs because learners directly engage with contextualized and meaningful tasks (Ketonen et al., 2023; Villarroel et al., 2020; Ajjawi et al., 2020).

Nevertheless, the implementation of authentic assessment continues to face several challenges. In many educational settings, authentic assessment remains predominantly managed by teachers, positioning students as passive recipients of evaluation rather than active participants in the assessment process. As a result, authentic assessment has not fully supported the development of learner autonomy and awareness. Yet, one of the key characteristics of learner-centered education is providing students with opportunities to understand, monitor, and evaluate their own learning progress (Carless & Winstone, 2023; Rutherford et al., 2024). Therefore, assessment approaches are needed that not only measure learning outcomes but also actively engage students in the evaluation process.

One approach with the potential to strengthen the function of authentic assessment is the integration of self-reflection into assessment design. Self-reflection is a metacognitive process that enables students to evaluate their learning experiences, identify strengths and weaknesses, and formulate strategies for continuous improvement (Dewey, 1933; Schön, 1983; Panadero, 2017). Through reflection, learners evaluate not only the outcomes they achieve but also the processes through which those outcomes are attained. Research indicates that structured reflective activities can enhance self-regulated learning, metacognitive awareness, and students' responsibility for their own learning processes (Panadero, 2017; Boud & Dawson, 2023; Broadbent et al., 2023). Consequently, self-reflection has considerable potential to strengthen assessment as both a learning tool and a mechanism for developing lifelong learning capacities.

The integration of authentic assessment and self-reflection is also aligned with the concept of assessment as learning, an approach that positions learners as the primary agents in

the assessment process. From this perspective, assessment functions not only to measure learning outcomes (assessment of learning) or support learning processes (assessment for learning) but also as an integral component of learning itself (assessment as learning) (Earl, 2013; Black & Wiliam, 1998; Rutherford et al., 2024). Through active engagement in reflection and self-evaluation, students develop the ability to monitor learning progress, set goals, and make more effective decisions regarding their learning strategies.

Although authentic assessment and self-reflection have been widely discussed in educational literature, studies that explicitly integrate these two concepts into a systematic, structured, and measurable assessment instrument remain limited. Most research on authentic assessment focuses on the development of assessment rubrics or project-based tasks, whereas studies on self-reflection primarily examine its effects on students' metacognitive development without directly incorporating it into formal assessment systems (Ketonen et al., 2023; Quinlan et al., 2024; Panadero, 2017). Consequently, a conceptual and methodological gap remains regarding how authentic assessment instruments can be systematically designed to integrate self-reflection as a component of learning outcome measurement.

Based on this gap, the present study aims to develop a self-reflection-based authentic assessment design as an instrument for measuring learner-centered learning outcomes. Specifically, the study seeks to produce an integrated assessment system that combines authentic tasks, performance assessment rubrics, and self-reflection components within a unified evaluation framework. Theoretically, this study is expected to enrich the literature on authentic assessment, assessment as learning, and learner-centered education. Practically, the resulting instrument may serve as an alternative for teachers, lecturers, and curriculum developers in establishing assessment systems that are more holistic, reflective, and aligned with the demands of twenty-first-century education.

METHODS

This study employed a Research and Development (R&D) approach aimed at developing and producing an authentic assessment instrument based on self-reflection as a tool for measuring student-centered learning outcomes. The development process adapted the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) because it provides systematic stages suitable for developing educational products and assessment instruments (Branch, 2009; Molenda, 2015).

The analysis stage was conducted through a literature review and needs assessment to identify problems associated with existing assessment practices and the need for an assessment instrument capable of measuring learning outcomes holistically. The literature review focused on the concepts of authentic assessment, self-reflection, assessment as learning, and student-centered learning. The findings from this stage served as the basis for determining the specifications of the instrument to be developed.

The design stage involved constructing the assessment instrument, which consisted of three main components: authentic tasks, performance assessment rubrics, and student self-reflection sheets. The instrument was designed based on the intended learning outcomes and the principles of authentic assessment and reflective learning. At this stage, assessment indicators, performance criteria, and reflection formats were also developed to measure students' metacognitive aspects.

The development stage involved creating a prototype of the instrument based on the established design. The initial product was then validated by three experts consisting of an educational evaluation specialist, a curriculum and instruction specialist, and an educational practitioner experienced in implementing authentic assessment. The validation process examined content relevance, clarity of indicators, measurability of the rubrics, readability of

the instrument, and alignment with student-centered learning principles. Validation ratings were collected using a four-point scale and analyzed using Aiken's V coefficient to determine the content validity of the instrument (Aiken, 1985).

The implementation stage was carried out through a limited field trial of the revised instrument following expert validation. The trial aimed to obtain information regarding instrument comprehensibility, practicality, and user responses toward the developed product. Implementation data were collected through observations of instrument use, authentic task assessment results, students' self-reflection sheets, and user response questionnaires.

The evaluation stage was conducted formatively throughout each phase of development to ensure the quality of the resulting product. Evaluation focused on the validity, practicality, and feasibility of the instrument for measuring learning outcomes. Quantitative and qualitative descriptive analyses were employed to analyze the collected data. Quantitative data were derived from expert validation and user response scores, whereas qualitative data were obtained from suggestions, comments, and feedback provided by validators and users during the development process. The results of the analysis were used to refine the product until a valid, practical, and feasible authentic assessment instrument based on self-reflection was obtained for implementation in student-centered learning environments.

RESULT AND DISCUSSION

Product of the Self-Reflection-Based Authentic Assessment Instrument

The result of this study is a self-reflection-based authentic assessment instrument designed to comprehensively measure learning outcomes within a student-centered learning context. The developed product consists of three main components: project-based authentic tasks, performance assessment rubrics, and self-reflection sheets. These components were systematically integrated to assess not only learning outcomes but also students' thinking processes, problem-solving abilities, and metacognitive awareness.

The authentic tasks were designed as learning activities requiring students to apply their knowledge and skills to solve problems relevant to real-life contexts. The assessment rubric was developed to ensure objectivity and consistency through clear and measurable performance indicators. Meanwhile, the self-reflection sheet functions as a tool for students to evaluate their learning experiences, identify their strengths and weaknesses, and formulate strategies for improving future learning performance.

Table 1. Components of the Developed Assessment Instrument

Component	Description	Function
Authentic task	Contextual problem-based task	Measures knowledge application and problem-solving abilities
Assessment rubric	Analytic rubric based on performance indicators	Ensures objectivity and consistency of assessment
Self-reflection	Self-evaluation instrument using reflective questions	Develops students' metacognition and self-regulation

The integration of these three components reflects an effort to reconstruct assessment systems that focus not only on final learning outcomes but also on students' overall learning processes. This finding is consistent with the concept of authentic assessment, which emphasizes performance-based evaluation and the relevance of learning tasks to students' real-life experiences (Wiggins, 1998; Quinlan et al., 2024). Furthermore, the incorporation of self-reflection supports the concept of assessment as learning, in which students become active participants in evaluating their own learning processes (Earl, 2013; Rutherford et al., 2024).

Instrument Validation Results

The initial product was validated by three experts consisting of an educational evaluation specialist, a curriculum and instruction expert, and an educational practitioner. The validation process examined content relevance, clarity of indicators, rubric measurability, readability, and alignment with student-centered learning principles.

Analysis using Aiken's V coefficient indicated that all components of the instrument demonstrated a high level of validity and met the criteria for implementation following minor revisions recommended by the validators.

Table 2. Instrument Validation Results

Evaluated Aspect	Aiken's V	Category
Content relevance	0.89	Highly valid
Indicator clarity	0.87	Highly valid
Rubric measurability	0.91	Highly valid
Instrument readability	0.88	Highly valid
Alignment with student-centered learning	0.92	Highly valid
Average	0.89	Highly valid

Based on the validation results, the experts recommended several improvements, including refining rubric indicators, simplifying the language used in the reflection sheets, and adjusting several authentic task examples to better suit student characteristics. After revisions were completed, the instrument was considered suitable for limited-scale implementation.

The high validity scores indicate a strong alignment between assessment indicators, intended learning outcomes, and assessment objectives. This finding supports Aiken's (1985) argument that content validity is one of the primary indicators of educational measurement quality. Furthermore, the integration of authentic tasks, performance rubrics, and self-reflection demonstrates that the instrument not only fulfills technical assessment requirements but also promotes meaningful learning experiences for students (McArthur, 2023; Ketonen et al., 2023).

Structure of Authentic Tasks and Assessment Rubrics

The development results indicate that the authentic tasks were structured as problem-based projects requiring students to identify problems, analyze causes, formulate solutions, and present their findings. This structure was designed to accommodate multiple dimensions of learning outcomes that cannot be adequately measured through conventional written examinations.

Table 3. Structure of Authentic Tasks

Task Stage	Student Activity
Problem identification	Identifying contextual issues or problems
Problem analysis	Collecting and analyzing supporting information
Solution development	Designing alternative solutions based on learned concepts
Presentation of results	Presenting findings and arguments systematically
Self-reflection	Evaluating the learning process and outcomes

To assess student performance, an analytic rubric consisting of four major dimensions was developed.

Table 4. Performance Assessment Rubric

Aspect	Score 4	Score 3	Score 2	Score 1
Conceptual understanding	Highly accurate and comprehensive	Accurate	Less accurate	Inaccurate
Analysis	Highly systematic and critical	Systematic	Less systematic	Unsystematic
Application	Highly relevant and applicable	Relevant	Less relevant	Irrelevant
Creativity	Highly innovative	Innovative	Less innovative	Not innovative

The developed task structure and rubric provide clear guidance for both teachers and students regarding expected performance standards. Clear indicators enable students to understand the quality of work expected while assisting teachers in conducting more objective and consistent assessments. This finding aligns with studies by Ajjawi et al. (2020) and Villarroel et al. (2020), which reported that rubric-based authentic assessment enhances assessment transparency and improves the quality of feedback received by learners.

Development of Self-Reflection as an Assessment Component

The self-reflection component was developed in the form of open-ended questions designed to help students evaluate their learning experiences. Reflective questions focused on content understanding, learning strategies used, challenges encountered, and plans for future improvement.

Table 5. Self-Reflection Format

Reflection Indicator	Reflective Question
Content understanding	What new understanding did I gain today?
Learning strategies	Which strategy helped me understand the material most effectively?
Learning challenges	What difficulties did I experience during the learning process?
Self-improvement	What will I do to improve my learning outcomes in future activities?

Implementation results showed that students were able to identify their strengths and weaknesses more systematically after using the reflection sheet. Reflective activities also encouraged students to become more aware of their learning processes, shifting the focus of learning beyond final outcomes.

These findings are consistent with studies by Panadero (2017), Boud and Dawson (2023), and Broadbent et al. (2023), which demonstrate that structured reflection contributes to the development of self-regulated learning, metacognitive awareness, and learner responsibility. From the perspective of assessment as learning, self-reflection functions as a mechanism through which students monitor their own learning progress and make informed decisions regarding their learning strategies (Carless & Winstone, 2023; Rutherford et al., 2024).

Implications of Instrument Development for Student-Centered Learning

The findings indicate that the developed self-reflection-based authentic assessment instrument has significant potential to support the implementation of student-centered learning. The integration of authentic tasks, performance rubrics, and self-reflection enables assessment to function not only as a tool for measuring learning outcomes but also as a learning mechanism that promotes active student engagement in constructing knowledge and evaluating their own learning progress.

Conceptually, this instrument represents a shift from assessment of learning toward assessment for learning and assessment as learning. Through active participation in reflective processes, students gain opportunities to develop metacognitive skills, learning autonomy, and responsibility for their own learning. These findings reinforce recent studies emphasizing that assessment practices incorporating reflection and active learner participation can enhance learning quality while fostering the development of twenty-first-century competencies required in increasingly complex and dynamic educational environments (OECD, 2023; UNESCO, 2024; Quinlan et al., 2024; McArthur, 2023).

CONCLUSION

This study successfully developed a self-reflection-based authentic assessment instrument as a tool for measuring learning outcomes aligned with the principles of student-centered learning. The developed product consists of three main components: contextual problem-based authentic tasks, analytic performance assessment rubrics, and self-reflection sheets integrated into a comprehensive assessment system. Expert validation results indicated that the instrument demonstrated a very high level of validity, with an average Aiken's V coefficient of 0.89, confirming its suitability for implementation in educational settings.

The integration of self-reflection into authentic assessment enables evaluation to focus not only on learning outcomes but also on students' thinking processes, metacognitive awareness, and self-regulation abilities. Consequently, the developed instrument supports a paradigm shift from assessment of learning toward assessment for learning and assessment as learning. Theoretically, this study contributes to the advancement of more holistic and humanistic assessment models. Practically, the instrument can serve as an alternative assessment approach that assists educators in measuring learning outcomes more comprehensively while promoting students' active engagement in the evaluation process.

REFERENCES

- Aiken, L. R. (1985). Three coefficients for analyzing the reliability and validity of ratings. *Educational and Psychological Measurement*, 45(1), 131–142. <https://doi.org/10.1177/0013164485451012>
- Ajjawi, R., Tai, J., Boud, D., Dawson, P., & Panadero, E. (2020). Assessment for inclusion in higher education: Promoting equity and social justice through assessment. *Assessment & Evaluation in Higher Education*, 45(6), 927–940. <https://doi.org/10.1080/02602938.2019.1702355>
- Biggs, J., & Tang, C. (2011). *Teaching for Quality Learning at University* (4th ed.). Open University Press.
- Black, P., & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education: Principles, Policy & Practice*, 5(1), 7–74. <https://doi.org/10.1080/0969595980050102>
- Boud, D., & Dawson, P. (2023). What feedback literate teachers do: An empirically-derived competency framework. *Assessment & Evaluation in Higher Education*, 48(2), 158–171. <https://doi.org/10.1080/02602938.2021.1910928>
- Branch, R. M. (2009). *Instructional Design: The ADDIE Approach*. Springer.
- Brookhart, S. M. (2018). *How to Create and Use Rubrics for Formative Assessment and Grading*. ASCD.
- Carless, D., & Winstone, N. E. (2023). Teacher feedback literacy and its interplay with student feedback literacy. *Teaching in Higher Education*, 28(1), 150–163. <https://doi.org/10.1080/13562517.2020.1782372>
- Dewey, J. (1933). *How We Think*. D.C. Heath and Company.
- Earl, L. M. (2013). *Assessment as Learning: Using Classroom Assessment to Maximize Student*

- Learning* (2nd ed.). Corwin Press.
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2019). *How to Design and Evaluate Research in Education* (10th ed.). McGraw-Hill Education.
- Jonsson, A., & Svingby, G. (2007). The use of scoring rubrics: Reliability, validity and educational consequences. *Educational Research Review*, 2(2), 130–144. <https://doi.org/10.1016/j.edurev.2007.05.002>
- Ketonen, E., Nieminen, J. H., & Hähkiöniemi, M. (2023). Student agency and assessment practices in higher education: A systematic review. *Educational Research Review*, 39, 100530. <https://doi.org/10.1016/j.edurev.2023.100530>
- McArthur, J. (2023). *Rethinking Authentic Assessment: Work, Well-being, and Society*. Bloomsbury Academic.
- Molenda, M. (2015). In search of the elusive ADDIE model. *Performance Improvement*, 54(2), 40–42. <https://doi.org/10.1002/pfi.21461>
- OECD. (2023). *Future of Education and Skills 2030: Conceptual Learning Framework*. OECD Publishing.
- Panadero, E. (2017). A review of self-regulated learning: Six models and four directions for research. *Frontiers in Psychology*, 8, 422. <https://doi.org/10.3389/fpsyg.2017.00422>
- Quinlan, K. M., Ajjawi, R., Bearman, M., Mattick, K., & Rees, C. E. (2024). Authentic assessment in higher education: A systematic review and future agenda. *Assessment & Evaluation in Higher Education*, 49(2), 215–233. <https://doi.org/10.1080/02602938.2023.2191562>
- Rutherford, T., Bousquet, F., & Carless, D. (2024). Assessment as learning: Advancing student agency through reflective assessment practices. *Studies in Educational Evaluation*, 80, 101332. <https://doi.org/10.1016/j.stueduc.2024.101332>
- Schön, D. A. (1983). *The Reflective Practitioner: How Professionals Think in Action*. Basic Books.
- UNESCO. (2024). *UNESCO Education Strategy 2022–2029*. UNESCO Publishing.
- Villarroel, V., Bloxham, S., Bruna, D., Bruna, C., & Herrera-Seda, C. (2020). Authentic assessment: Creating a blueprint for course design. *Assessment & Evaluation in Higher Education*, 45(2), 186–202. <https://doi.org/10.1080/02602938.2019.1630741>
- Wiggins, G. (1998). *Educative Assessment: Designing Assessments to Inform and Improve Student Performance*. Jossey-Bass.
- Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory Into Practice*, 41(2), 64–70. https://doi.org/10.1207/s15430421tip4102_2