

Authentic Assessment In The Ai Era: Integrating Local Wisdom And Digital Literacy In Culturally Responsive Learning

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ABSTRACT

The development of artificial intelligence (AI) offers new opportunities in primary education assessment, particularly through authentic assessment approaches that assess skills in real contexts. This study aims to analyze the implementation of AI-based authentic assessments that integrate local wisdom and digital literacy in culturally responsive learning in primary schools. The study used a qualitative descriptive approach supported by simple quantitative analysis of the assessment results. The subjects were 30 sixth-grade students at Tanah Kali Kedinding Elementary School. The assessment instruments included essay questions based on the local figure Sarif Tambak Oso, video products with the CapCut application, Google Form-based digital quizzes, group discussions, and digital reflective journals. Data were collected through assessment results, observations, and interviews, then analyzed using the Miles & Huberman interactive model and simple item analysis. The results showed: (1) student achievement varied, with the highest results in AI-based digital quizzes (90%) and the lowest in digital reflective journals (55%); (2) the characteristics of authentic assessment instruments were characterized by the integration of cultural contexts, the use of digital technology, and a focus on cognitive, affective, and psychomotor aspects; and (3) the role of AI is proven to accelerate the analysis of learning outcomes, local wisdom makes assessments more meaningful and contextual, while digital literacy strengthens 21st century skills. Thus, authentic AI-based assessments that integrate local wisdom and digital literacy not only function as evaluation tools, but also as a vehicle for character building, digital literacy, and cultural preservation.

Keywords: Authentic Assessment, Artificial Intelligence, Local Wisdom, Digital Literacy, Culturally Responsive Learning

1. INTRODUCTION

The development of artificial intelligence (AI) technology has had a significant impact on education, particularly in the realm of learning evaluation. AI offers new opportunities to create assessments that are more accurate, adaptive, and tailored to individual student needs (Holmes et al., 2023; Azzam & Charles, 2024). In the 21st-century era of education, assessments are no longer sufficient to simply assess the final result in the form of true-false answers, but must also be able to capture the processes, skills, and attitudes demonstrated by students in learning. Authentic assessment is believed to be able to measure student learning success across the affective, cognitive, and psychomotor domains [3]. Therefore, authentic assessment is important because it assesses skills in a real context and is relevant to everyday life [4].

Authentic assessment is essentially a form of evaluation that requires students to perform tasks that reflect the application of knowledge and skills in real-life situations [5]. However, a major challenge in implementing authentic assessment in elementary schools is designing instruments that are relevant, contextual, and efficient. The advent of AI can address some of these challenges by providing fast, accurate data analysis and formative feedback to teachers and students [6].

On the other hand, learning in Indonesia cannot be separated from the local cultural context. Local wisdom is a crucial foundation for the development of students' character, identity, and morals, starting from elementary school [7]. The integration of local wisdom into authentic assessments allows the learning process to be oriented not only toward academic outcomes but also to strengthen cultural values inherited from the community. This approach aligns with culturally responsive teaching (CRT), which emphasizes that learning and assessment must be responsive to students' cultural backgrounds to be more meaningful [8].

Besides AI and local wisdom, another equally important challenge is digital literacy. In the era of digital

transformation, students are required to master not only technical skills in using devices, but also critical, creative, and ethical skills in accessing, processing, and disseminating information [9]. Authentic digital-based assessments can provide a means for students to develop digital literacy while simultaneously practicing it directly in learning assignments, such as creating videos, interactive quizzes, or online reflective journals.

Several previous studies have demonstrated the effectiveness of authentic assessment in improving critical thinking and problem-solving skills (Hains-Wesson & le Roux, 2024; Indriati et al., 2024). However, there is limited research integrating AI, local wisdom, and digital literacy simultaneously into authentic assessments in elementary schools. In reality, the implementation of assessment in elementary schools in Indonesia still tends to focus on traditional, cognitive-oriented assessments, dominated by multiple-choice written tests, while contextual, digital, and cultural aspects are often neglected (Lukman et al., 2023; Taylor & Luitel, 2019). Yet, integrating these three aspects can address the needs of 21st-century education: developing students' cognitive, social, and digital skills while maintaining the relevance of local culture in learning.

Based on this background, this study aims to analyze the implementation of AI-based authentic assessment with the integration of local wisdom and digital literacy in culturally responsive learning in elementary schools. Specifically, this study answers the following questions: (1) how students achieve each assessment indicator, and (2) what roles do AI, local wisdom, and digital literacy play in supporting authentic assessment.

2. METHOD

Research Design

This study employed a qualitative descriptive approach coupled with simple quantitative analysis of the assessment results. This approach was chosen to obtain a comprehensive overview of the implementation of authentic AI-based assessments with the integration of local wisdom and digital literacy. The qualitative approach enabled researchers to deeply understand the processes, meanings, and student engagement [14], while simple quantitative analysis was used to support the interpretation of the numerical data from the assessment results.

Research Subjects

The research subjects were 30 sixth-grade A students at SDN Tanah Kali Kedinding I/251, Surabaya. Classes were selected purposively based on the availability of teachers who were familiar with using digital technology in their teaching. Purposive sampling is used in qualitative research to select participants relevant to the research objectives [15].

Research Instruments

The instruments used are designed to reflect the integration of AI, local wisdom, and digital literacy, including:

1. Essay questions based on local figure Sarif Tambak Oso (measuring relevance to local wisdom).
2. Digital products in the form of short videos using the CapCut application (developing creativity and digital literacy).
3. Digital quizzes using Google Forms with AI-based automatic analysis (demonstrating the adaptability of technology-enabled assessments).
4. Group discussions with role-plays on the value of responsibility (measuring affective and social aspects).
5. Digital reflective journals on the application of cultural values in daily life (measuring reflection and internalization of values).

The use of these various instruments is in line with the principles of authentic assessment which assess knowledge, skills, and attitudes in real contexts (Gulikers et al., 2004; Lim et al., 2022).

Data collection technique

Data is collected using several techniques to maintain the diversity of information, namely:

1. Student assessment results (question answers, digital products, reflection journals).
2. Classroom observations during group discussions and product presentations.
3. Interviews with teachers to gain perspectives on authentic AI-based assessments.

The use of this combination of data supports the principle of triangulation in qualitative research [18].

Data Analysis Techniques

Data analysis was carried out in two stages:

1. Simple quantitative analysis, including item analysis (difficulty level, discrimination power, validity), and tabulation of student achievement for each type of assessment.
2. Qualitative analysis, using an interactive model [15], which includes data reduction, data presentation, and conclusion drawing. This analysis is used to interpret student engagement in authentic assessments, including cognitive, affective, psychomotor, and digital literacy aspects.

Data validity was carried out through source triangulation (assessment results, observations, interviews) and method triangulation (quantitative and qualitative analysis), in accordance with recommendations [16].

3. RESULTS AND DISCUSSION

Authentic Assessment Item Analysis

The authentic assessment was designed by integrating AI, local wisdom, and digital literacy. The instruments used included descriptive questions, Google Form-based digital quizzes, video products, group discussions, and digital reflection journals. The item analysis is presented in Table 1.

Table 1. Analysis of Authentic Assessment Items Based on Local Wisdom and Digital Literacy

No	Question Indicator (AI & Local Wisdom Based)	Question/Product Form	Difficult Level	Differential Power	Observation Results	Information
1	Identifying the value of honesty in the character Sarip Tambak Oso	Short description	Currently	Tall	78% of students answered correctly	Valid
2	environmental awareness with the Capcut application	Digital products	Tall	Currently	65% of students are able to make good videos	Need technical assistance
3	Complete a Google Form-based quiz on the role of cultural figures.	Digital quiz (AI scoring)	Low	Tall	90% of students completed on time	Effective
4	Group discussion: the value of responsibility in everyday life	discussion	Currently	Currently	70% of students actively participate	Need clear instructions
5	Personal reflection in e-journal on the application of local values in	Digital journal	Tall	Low	55% of students filled in in depth	Need reflection practice

	the use of technology					
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Student Achievement in Each Assessment Indicator

Student achievement in this authentic assessment varied depending on the type of task assigned. The results are as follows:

Essay questions based on local figures: 78% of students answered correctly, demonstrating an understanding of the concept in the context of local culture.

1. Digital video product: 65% of students successfully created a video that met both creativity and technical criteria.
2. AI-based digital quiz: 90% of students completed the quiz on time with a low level of difficulty and high levels of discrimination.
3. Group discussion (role play): 70% of students actively participated, demonstrating responsibility and collaboration skills.
4. Digital reflective journal: 55% of students wrote in-depth reflections on cultural values, while the remainder limited their responses to simple descriptions.

These results indicate that student achievement is generally in the fairly good category, with strengths in cognitive aspects (digital quizzes and essay questions) and still requires assistance in reflective skills and digital creativity.

The Role of AI in Improving Assessment Effectiveness

The analysis showed that the Google Form-based assessment (item 3) had a low level of difficulty and high discrimination, with 90% of students completing it on time. This aligns with findings [19] that AI-based assessments enable fast and accurate data management, enabling teachers to provide real-time feedback. With AI support, authentic assessments not only measure learning outcomes but also serve as a means of continuous learning.

The development of AI presents new opportunities in primary education, particularly in the realm of assessment. AI can help teachers analyze student learning outcomes more quickly, accurately, and adaptively. [20] state that the application of AI in assessment allows teachers to access more in-depth information about student skill development, including critical thinking, creativity, and collaboration. This differs from traditional assessments, which tend to focus on outcomes rather than the learning process.

Dalam konteks asesmen otentik, AI mampu memperluas cakupan penilaian melalui integrasi platform digital seperti Google Form, Learning Management System (LMS), hingga aplikasi berbasis machine learning yang mampu memberikan real-time feedback. (Shute & Rahimi, 2017; Prissly & Hidayat, 2023) menekankan bahwa AI-based assessment berfungsi bukan hanya sebagai alat evaluasi, melainkan juga sebagai sarana pembelajaran (assessment for learning). Dengan demikian, asesmen otentik di era AI tidak lagi sebatas pengukuran kognitif, melainkan juga mendukung pembentukan karakter dan literasi digital siswa.

Local Wisdom as a Learning Context

The descriptive question (item 1) relating to the character Sarif Tambak Oso was answered correctly by 78% of students, demonstrating high levels of discrimination. This demonstrates that integrating local figures into assessments can strengthen students' understanding while instilling cultural values. [23] states that culturally responsive teaching (CRT) can make assessments more inclusive because they are relevant to students' real lives. Thus, local wisdom-based assessments not only measure cognitive aspects but also internalize moral values and character.

Culturally responsive learning emphasizes the importance of linking learning experiences to students' social and cultural backgrounds [24]. In this study, authentic assessment was contextualized with local wisdom through the cultural figure Sarif Tambak Oso. This figure represents the values of honesty, responsibility, and

environmental stewardship relevant to student character development. Connecting the assessment with local wisdom makes the evaluation process more effective.

Connecting assessments with local wisdom makes the evaluation process more meaningful, as students are not only tested on their academic abilities but also challenged to reflect on the cultural values surrounding them. This aligns with Ashrafova, (2024) perspective on culturally responsive teaching (CRT), which emphasizes the importance of integrating local culture into learning so that students feel recognized for their identity. Furthermore, integrating local wisdom into assessments helps prevent cultural homogenization caused by globalization and digitalization. In other words, authentic AI-based assessments not only promote efficiency but also serve as a means of cultural preservation.

Literasi Digital sebagai Kompetensi Abad 21

Video products (point 2) and digital journals (point 5) demand higher digital literacy skills. Although only 65% of students successfully created videos and 55% were able to write in-depth reflections, these activities provided space for the development of creativity, collaboration, and critical thinking skills. (UNESCO, 2018; Kayyali, 2024) emphasize that digital literacy encompasses more than just technical skills but also ethical skills in using technology. These findings demonstrate the need for technical assistance to better prepare students for digital challenges.

One of the main challenges in basic education today is how to facilitate students' digital literacy from an early age. [9] defines digital literacy as the ability to use, understand, and evaluate information in digital formats critically and ethically. In authentic AI-based assessments, digital literacy is not just a technical skill but an integral part of the learning process.

Through authentic assessments, students are encouraged to integrate digital skills, such as creating creative videos using the Capcut app, completing interactive quizzes on Google Forms, or collaborating through online platforms. These activities not only hone their understanding of academic concepts but also strengthen digital citizenship. Thus, digital literacy serves a dual purpose: as a competency that students must possess and as an indicator for authentic assessment.

Dynamics of Collaboration in CRT

Group discussions (item 4) showed that 70% of students actively participated. This activity emphasizes the role of CRT in creating a collaborative space that values students' cultural contributions. (Walker et al., 2023; Levy-Feldman, 2025) state that culturally responsive assessment should encourage students to connect personal experiences to academic material. Thus, student engagement in discussions not only hones social skills but also fosters a sense of ownership of the learning.

The Role of AI, Local Wisdom, and Digital Literacy in Supporting Authentic Assessment

The findings of this study also address the question of how AI, local wisdom, and digital literacy support authentic assessment. AI has been shown to be effective in accelerating the analysis of digital quiz results, providing real-time feedback, and helping teachers understand student progress more deeply (Shute & Rahimi, 2017; Holmes et al., 2023).

Local wisdom, through the role of Sarif Tambak Oso, successfully made assessments more meaningful by making them relevant to students' experiences and cultural identities. This aligns with the concept of culturally responsive teaching (Gay, 2002; Syamsia, 2024), which emphasizes the importance of cultural connectedness in learning.

Digital literacy is developed through video assignments, online quizzes, and reflective journals. These activities support the mastery of 21st-century skills, including creativity, collaboration, and ethical technology use [9].

Thus, the integration of AI, local wisdom, and digital literacy expands the function of assessment from merely evaluating learning outcomes to becoming a means of character building, digital skills, and preserving cultural values.

4. CLOSURE

This study demonstrates that the integration of Artificial Intelligence (AI), local wisdom, and digital literacy in authentic assessments can improve the effectiveness of learning in elementary schools. The analysis shows that AI-based assessments, such as digital quizzes with real-time feedback, help teachers identify student achievement quickly and accurately. The integration of local wisdom, through cultural figure Sarif Tambak Oso, makes the assessment more contextual and meaningful because it is relevant to students' cultural experiences. Authentic assessments based on AI and local wisdom not only assess cognitive abilities but also shape character, strengthen cultural values, and foster digital awareness. Teachers can utilize digital technology to design adaptive, contextual, and character-oriented assessments, with the support of training and school policies.

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