Innovation of Authentic Assessment Based on Higher Order Thinking Skills (HOTS) for Developing Students' Critical Thinking Skills in Economics Education

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This study aims to analyze the innovation of authentic assessment based on Higher Order Thinking Skills (HOTS) in enhancing students' critical thinking abilities in the subject of Economics. The research adopts a descriptive qualitative approach, with data collected through interviews, observations, and documentation. The research subjects include Economics teachers and senior high school students. The findings reveal that the planning of HOTS-based authentic assessment is conducted systematically, beginning with an analysis of learning outcomes and followed by the development of test items aligned with HOTS indicators. The application of this assessment involves oral tests, written tests, and classroom observations, with a primary focus on the cognitive domain. However, challenges remain in the optimal assessment of the affective and psychomotor domains. Overall, HOTS-based authentic assessment has a positive impact on students' critical thinking skills, as reflected in their increased enthusiasm, analytical abilities, and evaluation skills during the learning process

Introduction

Authentic assessment is an assessment approach that emphasizes the skills developed by students during the learning process through the use of real tasks or projects relevant to students' daily lives to measure their understanding and skills . Meanwhile, formative assessment is used to provide regular feedback to students during the learning process, while summative assessment is conducted at the end of the learning period to assess students' final achievements.

The importance of authentic assessment in the Merdeka Curriculum is that authentic assessment plays a key role in evaluating students' ability to apply their knowledge and skills in real-world contexts. The Merdeka Curriculum emphasizes learning freedom for students, and authentic assessment aligns with this approach as it provides a more accurate picture of students' ability to apply their learning in real-world situations . In the 2013 Curriculum, authentic assessment has been recognized as one of its distinctive features, emphasizing that assessment should be conducted throughout the learning process and not just at the end .

In the context of authentic assessment, students are not only tested on factual knowledge but also on their ability to apply that knowledge in real-world situations, encouraging them to think critically and analytically . Authentic assessment provides students with the opportunity to develop higher-order thinking skills, such as analysis, evaluation, and synthesis, which are key components of critical thinking . To develop these skills, authentic assessment based on Higher Order Thinking

Skills (HOTS) is required.

By utilizing authentic assessment based on HOTS, teachers can help students develop the critical thinking skills needed to face complex challenges in daily life and the future workplace. Through an emphasis on higher cognitive aspects in authentic assessment, students can be trained to think critically, logically, and reflectively, thereby preparing them to become independent and successful learners in the future. Through such assessment, it is hoped that students will be stimulated to develop competencies relevant to future work life (Duda & Susilo, 2018). Therefore, it is necessary to develop students' critical thinking skills through the implementation of authentic assessment based on HOTS in all subjects, especially economics.

Authentic HOTS-based assessment can stimulate students to develop critical thinking skills through tasks or projects that require them to solve problems, make decisions, and think creatively . HOTS-based authentic assessment has a strong relevance to students' critical thinking skills. Critical thinking skills are one of the important aspects of HOTS that are emphasized in authentic assessment. Research shows that HOTS-based authentic assessment can help improve students' critical thinking skills .

In addition, integrating critical thinking skills into economics lessons is in line with the demands of today's ever-evolving world of work, where critical thinking is recognized as an important skill for success. The development of critical thinking skills in economics is very important because of the complexity of economic problems that require analytical reasoning, evaluation, and problem-solving skills. By cultivating critical thinking skills in economic education, students gain the capacity to analyze economic phenomena, interpret data, and make appropriate decisions in diverse economic contexts .

One way to achieve critical thinking skills in economics lessons is for students to become accustomed to solving problems related to economics through HOTS-based assessments provided by teachers. Authentic HOTS-based assessments are relevant to the development of students' critical thinking skills. Authentic HOTS-based assessments are an assessment approach that enables students to develop higher-order thinking skills ..

However, based on the research results, several challenges faced by teachers in implementing authentic assessment were found, such as difficulties in planning assessments and using assessment tools effectively . This is due to several factors, including challenges related to self-assessment techniques and attitude assessment . In line with the results of research conducted by Ni Putu Eni Astuti, it was mentioned that teachers experience difficulties in developing assessments, both in the form of tests and non-tests. This is due to a lack of practical knowledge in development and time constraints . As stated in interviews with teachers, they have been implementing authentic assessment techniques since the implementation of the 2013 curriculum. However, when implementing this assessment, obstacles are often encountered related to the development of assessment instruments, especially in the aspects of attitude and skill assessment. According to the teacher, authentic assessment plays an important role in developing students' critical thinking skills in all subjects. Therefore, teachers at SMAN 1 Gerung continue to strive to carry out HOTS-based authentic assessment.

Research on authentic assessment and the development of higher-order thinking skills (HOTS) has been extensively conducted. For example, research conducted by Ermawati and Hidayat found that lecturers and students agreed on the effectiveness of authentic assessment in improving learning outcomes . Meanwhile, research by Jazilatun Nawali et al. revealed that authentic assessment through Performance Tests, Product Tests, and Project Tests can evaluate students' critical and creative thinking abilities in real-world contexts . These findings emphasize the importance of relevance between learning tasks and students' needs in facing future challenges. Furthermore, research by Supranoto shows that the use of HOTS questions based on CBT in economics lessons can significantly improve student learning outcomes. The use of HOTS questions requires students

to think critically, creatively, and be able to solve complex problems relevant to everyday life . Additionally, Susanti et al. in their literature review also emphasize that HOTS assessments present a significant opportunity to maximize learning, although there are still challenges in developing HOTS instruments that align with the characteristics of the subject matter and students' needs .

Thus, these studies confirm that the implementation of authentic HOTS-based assessment is crucial in learning, particularly for enhancing students' critical thinking skills in addressing real-world problems, including in Economics at the high school level. Previous studies have shown that both authentic assessment and Higher Order Thinking Skills (HOTS) can significantly enhance students' critical thinking skills. However, most of these studies examined the two approaches separately or in a general learning context. There is limited research that specifically integrates authentic assessment based on HOTS in the context of Economics learning at the high school level. Therefore, this study holds a strategic position by addressing this gap through the implementation of HOTS-based authentic assessment focused on the Economics subject to enhance students' critical thinking skills. Furthermore, the novelty of this study lies in the development and implementation of a context-sensitive authentic assessment model, specifically designed for the subject of economics and incorporating various cognitive levels (C3–C5).

Based on this, the study aims to describe the planning, implementation, and impact of HOTS-based authentic assessment in enhancing students’ critical thinking skills in economics at the secondary school level.Therefore, this research is expected to provide practical implications for teachers, especially economics teachers in secondary schools, by presenting an applicable and adaptable model of HOTS-based authentic assessment. This study contributes to the development of previous research by offering a more comprehensive and contextual assessment model, as well as providing practical implications for economics teachers in designing assessment instruments that not only measure cognitive aspects but also encourage analytical, evaluative, and reflective thinking skills that are important for solving real-life problems.

Methods

This study employs a descriptive qualitative approach aimed at describing innovations in authentic assessment based on Higher Order Thinking Skills (HOTS) and their influence on students' critical thinking skills in Economics education. The primary participants consisted of Economics teachers and students at SMAN 1 Gerung, West Lombok, selected using a purposive sampling strategy to ensure they had direct experience in implementing HOTS-based authentic assessments, with a total of 4 teachers and 35 students involved. Data were collected through structured interviews, non-participatory observations, and documentation. The interview and observation guidelines were developed based on the HOTS framework by Anderson & Krathwohl , focusing on cognitive levels C3 (application) to C5 (evaluation). For instance, one interview question asked, “How do you design assessment items that require students to analyze or evaluate economic issues?”, while the observation checklist included items such as, “Students demonstrate evaluative thinking when solving real-life economic problems.” The researcher served as the main instrument in the study, supported by these guidelines to ensure consistency and focus during data collection. The Miles and Huberman model was chosen due to its systematic and iterative nature, which is well-suited for analyzing rich qualitative data within complex educational settings. Data were analyzed using the Miles and Huberman model, which involves three interactive stages: data reduction (selecting, focusing, simplifying, and abstracting interview and observation data), data display (presenting the reduced data in matrices and narrative summaries), and conclusion drawing (interpreting patterns and themes to derive insights and understanding) . These systematic steps contributed to a comprehensive and transparent understanding of how HOTS-based authentic assessment is implemented and perceived in the Economics classroom. To enhance data credibility, the study employed triangulation of data collection methods, member checks by confirming interpretations with participants, and maintained an audit trail of decisions and coding processes.

Results and Discussion

The findings of this study indicate that the innovation of authentic assessment based on Higher Order Thinking Skills (HOTS) is reflected in three main components: designing, application, and its impact on students' critical thinking skills.

A. Designing HOTS-Based Authentic Assessments to Foster Students' Critical Thinking Skills in Economics Subject

This study found that SMAN 1 Gerung Lombok Barat has implemented HOTS (Higher Order Thinking Skills)-based authentic assessment in economics subjects. Teachers plan assessments by setting objectives, selecting assessment types, determining instrument formats, and creating grids. Before conducting authentic assessments, teachers first plan the authentic assessment techniques to be used. This planning stage is important to ensure that the assessment instruments used can comprehensively measure learning outcomes. As stated by Muthoharoh and Marsudi in their research, assessment requires planning, and by conducting proper assessment planning, the results obtained will also be optimal . Teachers plan assessments by setting objectives, selecting assessment types, determining instrument formats, and creating grids. As Muthoharoh and Marsudi note, planning is essential to ensure that assessment instruments measure outcomes comprehensively.

In the local context, teachers emphasize instrument development, ensuring HOTS indicators (C3–C5) are reflected in cognitive assessments. This is crucial for training students in critical thinking. However, in practice, teachers often skip the pilot testing stage due to limited time—a key challenge in rural or under-resourced schools. Previous studies (e.g., Aswandi & Wahab recommend detailed planning, including clear formulation of objectives across cognitive, affective, and psychomotor domains. Teachers at SMAN 1 Gerung have adopted this partially, focusing more on cognitive planning, with the affective and psychomotor domains being more difficult to operationalize. This supports Nurmalasari's view that affective indicators are often less prioritized due to their abstract nature.

Furthermore, it is mentioned that planning in authentic assessment is important to ensure that the assessment process in learning is carried out effectively, efficiently, and comprehensively. Thus, thorough planning is the key to overcoming various challenges faced by teachers in implementing authentic assessment with various limitations . This is especially true when developing HOTS-based authentic assessment planning. In addition, it is also stated that planning is important in authentic assessment because good planning will include the determination of clear assessment criteria, so that students can understand the questions and the learning objectives can be achieved properly . In line with this, it is mentioned that thorough planning is an important foundation for achieving better and more meaningful educational goals. Therefore, good planning is necessary to achieve these goals ..

One important aspect in the planning stage of HOTS-based authentic assessment at SMAN 1 Gerung Lombok Barat is the development of instruments. This is because instruments are related to measuring tools that contain elements or indicators of HOTS assessment so that through this assessment, students' critical thinking skills can be trained properly. Based on the above research findings, the authentic assessment planning conducted by teachers at SMAN 1 Gerung Lombok Barat includes analyzing learning outcomes, learning objectives, determining test formats, test length, and test duration. Subsequently, teachers create test instrument guidelines to be used.

As mentioned in the research conducted by Aswandi and Wahab, the first step in authentic assessment is to clearly and specifically formulate learning objectives, which encompass the cognitive, affective, and psychomotor aspects that students aim to achieve . After the objectives are set, the next step is to determine and develop achievement indicators used to assess students. These indicators must align with the learning objectives and be measurable, thereby providing

accurate information about student progress .

According to teachers at SMAN 1 Gerung Lombok Barat, the determination of the above indicators is adjusted to HOTS indicators starting from level C3 to C5. The next step is to determine the assessment techniques. In this case, for authentic assessment in the cognitive aspect, teachers use written and oral tests. In the cognitive aspect, teachers develop assessment indicators based on HOTS assessment instrument indicators. Meanwhile, for authentic assessment in the affective or attitude aspect, self-assessment and peer assessment are used, and occasionally teachers use observation assessment techniques. Furthermore, for skill assessment, teachers use performance assessment techniques. After determining the assessment technique, test format, and length, teachers write the test items through two stages: drafting the questions and alternative answers. In this assessment planning, teachers develop assessment instruments based on the learning objectives to be assessed. Once the instruments are ready, teachers should conduct a pilot test to ensure the validity of the instruments. However, in reality, teachers at SMAN 1 Gerung Lombok Barat do not reach this stage due to time constraints.

Additionally, from the interview results, it was mentioned that in planning authentic assessment based on HOTS, teachers encountered several challenges, such as insufficient time to develop authentic assessments, particularly in the areas of attitude and skills. This is because developing assessment instruments for attitude and skills is quite challenging.

While planning is conducted with rigor in the cognitive domain, its underdevelopment in other domains may stem from both a lack of training and the difficulty of measuring abstract competencies. This underlines the importance of professional development for teachers, especially in designing comprehensive assessments.

B. The Application of HOTS-Based Authentic Assessment on Students' Critical Thinking Skills in Economics Education

In application, SMAN 1 Gerung carries out assessments mainly in the knowledge domain, using written and oral tests. Teachers acknowledge the challenge of developing valid instruments for affective and psychomotor aspects. As a result, they rely on peer-assessment, self-assessment, and performance-based techniques, though not consistently applied. The process involves conducting authentic assessment activities in accordance with the established plan, while also carrying out authentic assessment that encompasses the evaluation of attitudes, knowledge, and skills. Authentic assessment is conducted using a format that allows students to complete a task or demonstrate information in solving a problem. As explained in the research results above, the implementation of HOTS-based authentic assessment at SMAN 1 Gerung Lombok Barat only covers the knowledge aspect.

This is because there are several obstacles for teachers in developing HOTS-based authentic assessments in the affective and psychomotor domains. These obstacles include the need for more time to develop such assessments, which often leaves teachers feeling overwhelmed in terms of time management. In addition, there are also obstacles related to the validity of the instruments developed by teachers to assess affective and psychomotor aspects. Nevertheless, teachers still conduct authentic assessments for attitude and skill aspects using observation assessment techniques, self-assessment, and peer assessment for attitude aspects. For skill aspects, teachers only use performance-based assessments. The implementation of these assessments has been adapted to the learning needs and characteristics of the learning objectives for each sub-topic. Authentic assessments are conducted during and after the learning process. Through authentic assessments, teachers can gain a deeper understanding of students' strengths and development that may not be apparent through traditional assessments .

This reflects a common issue in Indonesian classrooms, where authentic assessments are often reduced to cognitive testing due to workload and class size. According to Abosalem , authentic

assessment requires contextual relevance and multifaceted tools, which are difficult to implement in classrooms with high student-teacher ratios. For broader adoption, simplified rubrics and peer-supported assessment methods could help teachers in larger classes or other disciplines. Subjects like Mathematics or Physics may need contextual problem scenarios that simulate real-world challenges, while maintaining alignment with HOTS criteria.

C. Impact Students' Critical Thinking Skills in Economics Education

From the results of the interviews and observations, it was found that authentic assessment can hone students' critical thinking skills in economics at SMAN 1 Gerung Lombok Barat. This can be seen from the results of students' daily tests in economics, which are classified according to critical thinking skills as follows.

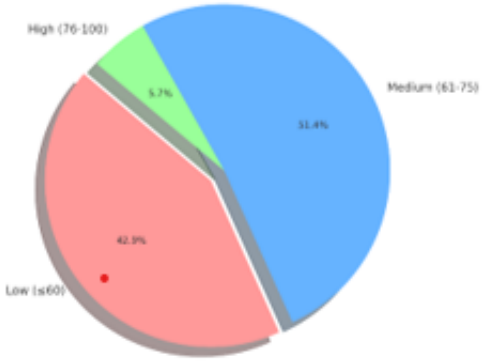

Figure 1. *Students' Critical Thinking Skills in Economics*

The results of the study show that the majority of students fall into the "moderate" category in terms of critical thinking ability, accounting for 51%. This indicates that while there has been some development in students' higher-order thinking skills, the achievement has not yet reached an optimal level. This finding calls for serious attention in efforts to enhance the quality of HOTS-based learning. This moderate level of achievement may be attributed to several external factors that influence the internalization of students' critical thinking. First, students may have had limited exposure to HOTS-oriented instructional models in their prior educational experiences. Second, cultural and pedagogical factors—such as the dominance of rote learning practices—continue to hinder the development of analytical thinking. Third, non-academic environments such as the home or media may also fail to reinforce critical thinking outside of the classroom.

Therefore, assessment reform cannot stand alone. It must be accompanied by instructional transformation and the provision of support systems that extend beyond the formal classroom setting. These findings are consistent with Mansyur , who emphasized that authentic assessment encourages students to engage in real-world, contextual thinking. However, in educational cultures that remain traditional, without sustained scaffolding and gradual support, the impact of such assessments may be limited to surface-level gains.

From the pie chart above, it was found that the use of authentic assessment based on HOTS in economics at SMAN 1 Gerung can improve students' critical thinking skills. This was proven when teachers used authentic assessment based on HOTS in daily tests, as students were stimulated to think critically from the questions given.

Therefore, teachers at SMAN 1 Gerung in West Lombok developed authentic assessments based on higher-order thinking skills (HOTS) to further enhance students' critical thinking abilities. This

aligns with the findings of research conducted by Abosalem and Mansyur, who stated that in authentic assessment, students are not only tested on factual knowledge but also on their ability to apply that knowledge in real-world situations, encouraging them to think critically and analytically .

Furthermore, it is mentioned that authentic assessment provides students with the opportunity to develop higher-order thinking skills, such as analysis, evaluation, and synthesis, which are key components of critical thinking skills . Additionally, it is mentioned that authentic assessment is relevant to students' critical thinking skills because authentic assessment is designed to measure students' ability to solve problems in real-world contexts, allowing students to apply the knowledge and skills they have previously learned .

This situation is evident during the learning process when teachers ask students questions, and students are able to answer questions critically. It is not uncommon for students to ask questions about information that they feel has not been clearly conveyed by the teacher. The results of daily tests in economics show that the average critical thinking ability is in the moderate category.

Conclusion

Based on the results of the research and discussion, it can be concluded that the innovation of HOTS-based authentic assessment on students' critical thinking skills can be observed through three aspects: planning, application, and its impact on students' critical thinking skills. First, in the planning stage, teachers designed authentic assessments by establishing learning objectives, selecting appropriate assessment techniques, developing instruments aligned with HOTS indicators (C3–C5), and constructing assessment grids. While the cognitive domain was well-planned, the affective and psychomotor domains were less developed due to their abstract nature and limited time availability. Second, in terms of implementation, authentic assessments were predominantly conducted in the cognitive domain through written and oral tests. Techniques for assessing affective and psychomotor domains—such as observation, self-assessment, and peer-assessment—were applied but not consistently, largely due to time constraints and limited resources. Third, the impact of HOTS-based authentic assessment indicates that the majority of students were categorized as having a "moderate" level of critical thinking skills. This suggests some progress, though not yet optimal. Several external factors—such as limited prior exposure to HOTS-oriented instruction, culturally ingrained rote learning practices, and a lack of reinforcement outside the classroom—appear to hinder deeper development of critical thinking. Thus, the successful implementation of HOTS-based authentic assessment requires a synergy between well-structured planning, consistent application, and broader instructional transformation. This also includes ongoing professional development for teachers and systemic support that extends beyond the classroom.

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