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Development of an Economics Evaluation Tool Based on Higher Order Thinking Skills (Hots) Using Zepquiz for The Topic of Supply and Demand

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A B S T R A C T

This study developed an economic assessment instrument based on Higher Order Thinking Skills (HOTS) using ZepQuiz to assess students' understanding of supply and demand. The study aimed to describe the instrument development process, determine the improvement in students' critical thinking skills after using the developed instrument, and assess students' responses to its use. The ADDIE model was applied through the stages of analysis, design, development, implementation, and evaluation, involving 10th-grade students at SMAS IPIEM Surabaya. Expert validation results indicated that the developed instrument is suitable for use, with scores of 91% from evaluation experts, 83% from media experts, 81% from content experts, and 100% from language experts. The N-Gain test result of 0.7170 indicates a significant improvement in critical thinking skills, while student response reached 97.71%. Thus, the developed instrument is suitable for use as an evaluation tool in economics education

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INTRODUCTION

Learning assessment is an important part of the educational process because it serves to gather information about students' achievement of competencies while also providing a basis for decision-making aimed at improving the quality of learning. The transformation of education in the 21st century has shifted the focus of assessment from merely measuring students' mastery of subject content to evaluating higher-order thinking skills, problem-solving abilities, and the application of knowledge in authentic situations (Pratiwi et al., 2023; Wiono & Yolida, 2021). Therefore, the development of assessment instruments capable of meeting these demands is an aspect that requires attention in educational practice.

Critical thinking is one of the essential competencies that should be fostered through assessment practices. It encompasses the ability to examine information systematically, recognize and define problems, assess alternative solutions, and formulate conclusions based on logical and evidence-based reasoning (Rahmaniar et al., 2022). Students who possess critical thinking skills will be better prepared to face various problems and make rational decisions in their daily lives (Baharizki et al., 2021). In the context of assessment, this ability can be measured using Higher Order Thinking Skills (HOTS)-based instruments that emphasize the aspects of analyzing, evaluating, and creating as part of higher-order thinking skills (Anderson & Krathwohl, 2001).

Economics instruction, particularly regarding supply and demand, requires students to understand and analyze various economic phenomena occurring in their surroundings. This subject not only requires students to grasp basic concepts but also demands the ability to connect changes in price, quantity of goods, and factors influencing market dynamics (Saptono et al., 2020). In line with the implementation of the Merdeka Curriculum, economics instruction is aimed at developing students' analytical skills through the study of contextual phenomena closely related to daily life. However, observations and interviews with economics teachers at SMAS IPIEM Surabaya indicate that the assessment tools currently in use are still dominated by questions focused on lower and middle level thinking skills.

The use of digital technology in learning offers opportunities to create more engaging and interactive assessment processes. One tool that can be utilized is ZepQuiz, a gamification-based assessment platform that allows students to participate in assessment activities in a more enjoyable and participatory environment. The use of gamification in learning is known to increase student engagement while supporting the development of higher-order thinking skills (Zainuddin et al., 2020). Therefore, integrating HOTS-based assessment instruments with digital platforms such as ZepQuiz has the potential to serve as an alternative for creating more innovative assessments that align with the characteristics of today's students.

Several previous studies have developed HOTS-based assessment instruments for economics courses and demonstrated that these instruments are suitable for use in the classroom (Sholiha & Kurniawan, 2021). Other studies have also demonstrated that the use of ZepQuiz can enhance student engagement and

aid in the understanding of learning concepts (Husen & Wulandari, 2025). Nevertheless, research combining HOTS-based assessment instruments with the ZepQuiz platform on supply and demand material remains relatively limited. Furthermore, previous research has not specifically highlighted the use of such instruments to support the development of students' critical thinking skills in economics education.

Given these circumstances, this study was conducted to develop a Higher Order Thinking Skills (HOTS)-based economics assessment instrument supported by ZepQuiz for the topic of supply and demand. The contribution of this study lies in the development of an assessment instrument that integrates the HOTS approach with digital gamification as a means to measure and support the improvement of students' critical thinking skills. This study aims to describe the instrument development process, determine the improvement in students' critical thinking skills after using the developed instrument, and analyze students' responses to the use of this assessment instrument.

LITERATURE REVIEW

Revised Bloom's Taxonomy Theory

The Revised Bloom's Taxonomy, developed by Anderson and Krathwohl, is a framework for classifying learning objectives used to measure learners' cognitive processes. This taxonomy consists of six levels of ability: recall (C1), understanding (C2), application (C3), analysis (C4), evaluation (C5), and creation (C6). The revision emphasizes that students' thinking processes are not only oriented toward mastering knowledge but also toward the ability to process and use knowledge to solve various problems. The levels of analyzing, evaluating, and creating fall under the category of higher-order thinking skills (HOTS), which form the basis for the development of assessment instruments in this study (Anderson & Krathwohl, 2001; Apipah & Novaliyosi, 2023).

Assessment Instruments

Assessment instruments are designed to measure the extent to which students achieve the intended learning competencies. Beyond determining learning outcomes, assessment results provide valuable information that supports teachers in evaluating instructional effectiveness and planning appropriate interventions to enhance students' learning performance. A good assessment instrument must be valid, reliable, objective, and capable of measuring competencies in accordance with the established learning objectives. In the implementation of the Merdeka Curriculum, evaluation instruments are also required to measure higher-order thinking skills relevant to 21st-century learning needs (Fahrurrozi & Laili Rahmawati, 2021; Rahman & Nasryah, 2019; Ramadhani & Pratiwi, 2025).

Higher-Order Thinking Skills (HOTS)

Higher-Order Thinking Skills (HOTS) refer to advanced cognitive abilities that require learners to analyze information, evaluate evidence, and generate creative solutions when addressing complex problems. HOTS require students

to integrate different concepts, critically examine available evidence, and formulate reasoned solutions to complex problems. These cognitive abilities have become a major objective of 21st-century education because they support learners in making informed decisions, solving authentic problems, and developing creativity in various learning contexts. Consequently, assessment instruments should be designed to capture these advanced cognitive processes instead of focusing solely on factual knowledge (Anderson & Krathwohl, 2001; Heong et al., 2011; Sholiha & Kurniawan, 2021).

ZepQuiz Platform

ZepQuiz is a web-based assessment platform that integrates gamification features to support interactive classroom assessments, enabling teachers to administer quizzes in a more engaging and student-centered learning environment. This platform allows educators to present questions in the form of educational games so that students can engage in the assessment process more actively and enjoyably. ZepQuiz provides real-time feedback that aligns with the principles of Assessment for Learning in helping students understand their learning outcomes. Accordingly, the integration of ZepQuiz into classroom assessment can support the implementation of HOTS-oriented evaluation by encouraging greater student engagement throughout the assessment process (Feriansyah & Titaley, 2025).

METHODS

This study employed a Research and Development (R&D) methodology to design and develop a Higher Order Thinking Skills (HOTS)-based economics assessment instrument integrated with the ZepQuiz platform for the demand and supply topic. The R&D approach facilitates the systematic creation, validation, and refinement of educational products to ensure their quality and suitability for instructional practice. The resulting product was a digital assessment instrument designed to assess students' critical thinking skills through HOTS-oriented questions administered via ZepQuiz. The development process followed the ADDIE model, encompassing five stages: Analysis, Design, Development, Implementation, and Evaluation (Branch, 2009). This model was selected because it provides a comprehensive and systematic framework for identifying learning needs, developing instructional products, validating their quality, and evaluating their implementation in educational settings.

The research was carried out following the five phases of the ADDIE development model. First, the analysis phase involved classroom observations and interviews with an economics teacher at SMAS IPIEMS Surabaya to identify existing assessment practices, learning needs, and challenges related to students' critical thinking skills in the demand and supply topic. Second, during the design phase, the assessment instrument was planned by developing a test blueprint aligned with the Learning Outcomes (CP) and Learning Objectives (TP) of the Merdeka Curriculum. The test items were designed to measure higher-order thinking skills at the cognitive levels of analyzing (C4), evaluating (C5), and creating (C6). In addition, expert validation sheets and student response questionnaires were prepared. Third, the development phase involved

constructing the assessment items, integrating them into the ZepQuiz platform, conducting expert validation, revising the instrument based on the validators' feedback, and performing a limited trial to analyze item validity, reliability, difficulty level, discrimination index, and distractor effectiveness. Fourth, the finalized instrument was implemented with Grade X students through the ZepQuiz platform to collect data on students' critical thinking skills and their responses to the developed instrument. Finally, the evaluation phase was conducted by reviewing the validation results, item analysis, and students' responses to ensure that the developed assessment instrument met the required quality standards and was appropriate for classroom implementation.

The study involved four expert validators representing the fields of educational evaluation, instructional media, subject matter, and language to assess the quality of the developed instrument. Prior to classroom implementation, a limited trial was conducted with 20 Grade X Merdeka 1 students at SMAS IPIEMS Surabaya to examine the quality of the test items. After the necessary revisions had been completed, the finalized instrument was implemented with 25 Grade X Merdeka 2 students at the same school. The study collected both qualitative and quantitative data. Qualitative data consisted of comments and recommendations provided by the expert validators during the validation process, the quantitative data comprised expert validation scores, item analysis results, student questionnaire responses, and pretest–posttest scores reflecting students' critical thinking performance.

The instruments used for data collection included expert validation forms, achievement tests, and student response questionnaires. The expert validation forms were designed to evaluate the feasibility of the developed assessment instrument from the perspectives of evaluation, media design, subject content, and language quality. The achievement test comprised 20 multiple-choice questions developed according to Higher Order Thinking Skills (HOTS) indicators at the cognitive levels of analysis (C4), evaluation (C5), and creation (C6). The test items also reflected Facione's critical thinking dimensions, namely interpretation, analysis, evaluation, inference, and explanation. In addition, a student response questionnaire was distributed to gather students' perceptions of the practicality and usability of the developed assessment instrument. Expert validation employed a five-point Likert scale, whereas the student response questionnaire used a Guttman scale with dichotomous (Yes/No) responses.

Table 1 Likert Scale

Criteria	**Score**
Very Good	5
Good	4
Fair	3
Poor	2
Very Poor	1

The feasibility of the developed instrument was analyzed using percentage calculations as follows:

$$Percentage = \frac{Total\ score\ from\ data\ collection}{Maximum\ possible\ score}\ x\ 100\%$$

The resulting percentages were interpreted using the following criteria.

Table 2 Feasibility Criteria

Percentage Range	Interpretation
81%–100%	Very Feasible
61%–80%	Feasible
41%–60%	Fairly Feasible
21%–40%	Less Feasible
0%–20%	Not Feasible

The quality of the developed assessment instrument was examined through item analysis, including empirical validity, reliability, item difficulty, discrimination index, and distractor effectiveness using Anates V4. Empirical validity was assessed by comparing the obtained item correlation coefficient (r-value) with the critical r-table value at the 0.05 significance level. Test items with correlation coefficients exceeding the critical value were classified as valid. Instrument reliability was analyzed to determine the consistency of the measurement results. Furthermore, the difficulty index, discrimination index, and distractor effectiveness were evaluated to identify the quality of each multiple-choice item and to determine whether the items met the required criteria for use. To measure the improvement in students' critical thinking skills after the implementation of the HOTS-based assessment instrument assisted by ZepQuiz, the normalized gain (N-Gain) analysis proposed by (Hake, 1998) was employed. The N-Gain score was calculated using the following formula:

$$N\text{-}Gain = \frac{Posttest\ Score\ -\ Pretest\ Score}{Maximum\ Score\ -\ Pretest\ Score}$$

The obtained N-Gain scores were interpreted using the following classification criteria.

Table 3 N-Gain Criteria

N-Gain Score	Category
N-gain ≥ 0,70	High
0,30 ≤ N-gain < 0,70	Moderate
N-gain < 0,30	Low
N-gain ≤ 0	Fail

Student responses of the developed HOTS-based economics assessment instrument assisted by ZepQuiz were gathered using a questionnaire based on the Guttman scale. Each questionnaire item provided two alternative responses: "Yes" (score = 1) and "No" (score = 0). The collected responses were converted into percentages to determine the level of students' acceptance and perceptions of the developed assessment instrument. The percentage score was calculated using the following formula:

$$P = \frac{\text{Obtained Score}}{\text{Maximum Score}} \times 100\%$$

The results were interpreted using the criteria presented in Table 4.

Table 4 Student Response Criteria

Percentage	Category
81–100%	Very Good
61–80%	Good
41–60%	Fair
21–40%	Poor
0–20%	Very Poor

The instrument was considered to receive a positive response if the percentage score was at least 61% (Good category).

RESULTS

Development of HOTS Based Economic Assessment Instrument Assisted by ZepQuiz

This research developed a Higher Order Thinking Skills (HOTS)-based economics assessment instrument integrated with the ZepQuiz platform by adopting the ADDIE development model, which comprises five sequential stages: analysis, design, development, implementation, and evaluation (Branch, 2009). Each stage was carried out systematically to produce an assessment instrument that meets validity and practicality requirements while supporting the assessment of students' critical thinking skills on the topic of supply and demand.

1) Analysis

The analysis stage was carried out through classroom observations and interviews with the economics teacher at SMAS IPIEMS Surabaya to identify the need for developing an assessment instrument. The analysis focused on three aspects, namely performance analysis, needs analysis, and learning objective analysis. The performance analysis revealed that the implementation of economics learning had followed the Merdeka Curriculum; however, the assessment process was still dominated by conventional paper-based tests that primarily measured lower-order thinking skills (LOTS) and middle-order thinking skills (MOTS). The assessment instruments had not yet provided sufficient opportunities for students to analyze economic problems, evaluate information, or formulate solutions based on real-life situations. As a result, students' critical thinking skills, particularly in the topic of supply and demand, had not been optimally developed.

The needs analysis indicated that teachers required an assessment instrument capable of measuring Higher Order Thinking Skills (HOTS) while simultaneously creating a more engaging assessment experience. In addition, students needed an interactive digital assessment that encouraged active participation and contextual problem solving. Therefore, a HOTS-based economics assessment instrument supported by the ZepQuiz platform was

developed to facilitate digital assessment while promoting critical thinking in accordance with the demands of 21st-century learning.

Furthermore, the learning objective analysis focused on the Supply and Demand topic in Phase E Economics under the Merdeka Curriculum by reviewing the Learning Outcomes (CP) and Learning Objectives (TP). The analysis ensured that the developed assessment instrument aligned with curriculum requirements and measured cognitive processes at the C4 (analyzing), C5 (evaluating), and C6 (creating) levels of the Revised Bloom's Taxonomy.

Table 5 Learning Outcomes and Learning Objectives

Learning Outcomes	Learning Objectives
By the end of Phase E, students will be able to explain and analyze the concepts of supply and demand, including the laws of supply and demand, the factors that influence supply and demand, shifts in the supply and demand curves, and analyze the forms of supply and demand functions.	1. Students will be able to analyze the concepts of supply and demand in everyday economic activities. 2. Students will be able to analyze the relationship between price and the quantity of goods demanded and supplied based on the laws of supply and demand. 3. Students are able to analyze the factors that influence demand and supply in various economic phenomena. 4. Students are able to evaluate the causes of shifts in the demand and supply curves based on economic cases. 5. Students are able to analyze and solve problems involving demand and supply functions in the form of tables, curves, and equations.

2) Design

The second stage was the design phase, which focused on preparing a HOTS-based economics assessment instrument assisted by the ZepQuiz platform for the Supply and Demand topic. The development began by reviewing the Learning Outcomes (CP) and Learning Objectives (TP) of the Merdeka Curriculum to ensure that the instrument aligned with the expected competencies.

Based on the curriculum analysis, a test blueprint was developed as the basis for constructing the assessment items. The blueprint covered cognitive levels C4 (analyzing), C5 (evaluating), and C6 (creating) of the Revised Bloom's Taxonomy and was designed to measure students' critical thinking skills through contextual economic problems. Initially, 30 multiple-choice items were developed according to the learning indicators. After the item analysis process, 20 items that met the predetermined quality criteria were selected as the final assessment instrument. To measure students' critical thinking skills, a pretest and posttest consisting of five essay questions were

also designed based on Facione's critical thinking indicators, including interpretation, analysis, evaluation, inference, and explanation.

After the assessment items had been prepared, they were integrated into the ZepQuiz platform. The platform was configured to support online assessment by utilizing features such as multiple-choice quizzes, automatic scoring, time limits, access codes, leaderboards, and real-time monitoring. These features enabled the assessment process to become more interactive while allowing teachers to monitor students' performance efficiently during the implementation stage.

3) Development

The development stage focused on transforming the initial design into a complete Higher Order Thinking Skills (HOTS)-based economics assessment instrument integrated with the ZepQuiz platform. At this stage, the instrument was developed, reviewed by experts, revised, and prepared for limited implementation.

a) Development of the Assessment Instrument

The assessment instrument was developed based on the Learning Outcomes (CP) and Learning Objectives (TP) for the demand and supply topic in Phase E of the Merdeka Curriculum. Initially, 30 multiple-choice items were constructed to measure Higher Order Thinking Skills (HOTS) at the C4 (analyzing), C5 (evaluating), and C6 (creating) cognitive levels of the Revised Bloom's Taxonomy. Before implementation, a test blueprint was prepared to ensure that each item represented the intended learning objectives and critical thinking indicators. Following item analysis, 20 items that met the established quality criteria were selected as the final assessment instrument.

b) Development Using the ZepQuiz Platform

After the questions had been developed, they were integrated into the ZepQuiz platform to create an interactive digital assessment. The researcher first created a teacher account, selected the quiz map, completed the quiz identity, and uploaded all assessment items. ZepQuiz provides several supporting features, including multiple-choice questions, time limits, automatic scoring, leaderboards, QR codes, and access codes, allowing students to participate simultaneously through smartphones or computers.

c) Expert Validation

The developed product was evaluated by four experts consisting of an assessment expert, a media expert, a content expert, and a language expert. The validation process aimed to determine the feasibility of the assessment instrument in terms of content accuracy, assessment construction, media design, and language clarity. Validators also provided qualitative suggestions that were used to improve the product before implementation.

Table 6 Expert Validation Results

Validator	Score	Category
Assessment Expert	91%	Highly Feasible
Media Expert	83%	Feasible
Content Expert	81%	Feasible
Language Expert	100%	Highly Feasible

The validation results indicate that the developed assessment instrument achieved excellent feasibility. The assessment expert awarded a score of 91%, indicating that the items were appropriately constructed and aligned with HOTS principles. The media expert gave a score of 83%, confirming that the ZepQuiz interface was attractive and easy to use. The content expert assigned 81%, demonstrating that the questions were consistent with the demand and supply learning objectives, while the language expert provided a perfect score of 100%, indicating that the language was clear, accurate, and suitable for senior high school students. Overall, the instrument was considered feasible for classroom implementation.

Based on the validators' recommendations, several revisions were conducted before the limited trial. These revisions included improving question wording to reduce ambiguity, refining several distractors, adjusting images and graphs used as question stimuli, and optimizing the display settings on the ZepQuiz platform to improve readability and user experience.

d) Item Analysis

After expert validation and revision, the assessment instrument was administered in a limited trial involving 20 tenth grade students to examine the quality of the developed items. Anates V4 was employed to assess the quality of the developed items by examining empirical validity, reliability, item difficulty, discrimination index, and distractor effectiveness. The analysis was performed to determine whether each item met the requirements of a high-quality HOTS assessment instrument.

Table 7 Summary of Item Analysis Results

Analysis	Results
Number of developed items	30
Final selected items	20
Empirically valid items	18 items
Reliability coefficient	0.78 (High)
Dominant difficulty level	Moderate
Dominant discrimination index	Very Good
Distractor effectiveness	Most distractors functioned effectively

The empirical validity analysis showed that 18 items demonstrated acceptable validity based on the correlation coefficient generated by Anates. Items with correlation values meeting or approaching the required criterion were retained after minor revisions, while items with low correlation coefficients were discarded. Consequently, 20 items were selected as the final instrument for implementation.

The reliability analysis produced a coefficient of 0.78, indicating that the assessment instrument possessed high reliability. This result demonstrates that the developed instrument was capable of producing consistent measurements of students' critical thinking skills. The difficulty index analysis indicated that the instrument consisted of items with varying levels of difficulty. Most items were classified as moderate, while several were categorized as easy, very easy, and difficult. This distribution is considered appropriate because it enables the instrument to differentiate students with different levels of cognitive ability while maintaining a balanced level of challenge.

The discrimination index analysis further revealed that most items fell into the very good category, indicating that they effectively distinguished between high- and low-performing students. Only a few items showed moderate or low discrimination and were subsequently revised before the final selection.

The distractor analysis demonstrated that the majority of incorrect answer options functioned effectively, as they attracted at least 5% of respondents. Although several distractors required minor revision, the overall performance of the distractors supported the quality of the assessment instrument. Based on the overall item analysis, 20 multiple-choice items were retained as the final HOTS-based economics assessment instrument integrated with the ZepQuiz platform.

4) Implementation

The implementation stage involved administering the developed HOTS-based evaluation instrument assisted by ZepQuiz to 25 students of Class X-Merdeka 2 at SMAS IPIEM Surabaya. Before implementation, the instrument had been revised based on expert validation and item analysis results to ensure its feasibility for classroom use.

Students accessed the evaluation through the ZepQuiz platform using a quiz code provided by the researcher and completed the multiple-choice HOTS questions online. The use of ZepQuiz enabled students to take the assessment interactively while allowing the researcher to monitor the testing process and automatically record students' responses. After completing the assessment, students were asked to complete a response questionnaire to

evaluate the practicality, ease of use, attractiveness, and clarity of the developed evaluation instrument.

The implementation results indicated that the instrument functioned properly on the ZepQuiz platform without technical difficulties. Students were able to complete the evaluation independently, and the positive responses obtained from the questionnaire demonstrated that the developed instrument was practical and suitable for economics learning on demand and supply topics.

5) Evaluation

The evaluation stage was conducted as a formative evaluation throughout the development process. Product improvements were made based on suggestions from material experts, media experts, language experts, and evaluation experts, as well as the findings from the limited trial.

The results of the item analysis, including validity, reliability, difficulty index, discrimination index, and distractor effectiveness, served as the basis for selecting the final test items. Of the initial 30 multiple-choice questions, 20 items met the predetermined quality criteria and were retained as the final evaluation instrument, while the remaining items were revised or excluded.

In addition, students' response questionnaire results were analyzed to evaluate the practicality and acceptance of the instrument. The positive responses indicated that the HOTS-based evaluation instrument assisted by ZepQuiz user-friendly, engaging, and facilitated the implementation of economics assessment activities. Overall, the evaluation results confirmed that the skills in economics learning.

Improvement of Students' Critical Thinking Skills Using the HOTS-Based Economics Evaluation Instrument Assisted by ZepQuiz

Students' pretest and posttest scores from 25 participants were analyzed using the normalized gain (N-gain) score to measure changes in critical thinking skills after the implementation of the developed HOTS-based evaluation instrument assisted by ZepQuiz.

Table 8 N-Gain Analysis Results

Descriptive Statistics			
	N	Mean	Std. Deviation
NGain_Score	25	.7170	.29286
Ngain_Presentase	25	71.7044	29.28616
Valid N (listwise)	25		

Based on the N-gain analysis, the N-gain score was 0.717, placing students' improvement in the high category. The average N-gain percentage of 71.70% indicates that students' critical thinking skills improved after completing the assessment using the developed HOTS-based evaluation instrument assisted by ZepQuiz. These findings suggest that the developed instrument is appropriate for assessing critical thinking skills in learning the topics of supply and demand.

Students' Responses to the HOTS Based Economics Evaluation Instrument Assisted by ZepQuiz

Students' responses toward the developed evaluation instrument were collected using a Guttman-scale questionnaire after the implementation of the assessment through ZepQuiz.

Table 9 Students' Response Questionnaire Results

Aspect	Percentage	Category
Display	97.00%	Very Good
Content and Language	97.00%	Very Good
Usefulness in Learning Evaluation	98.67%	Very Good
Overall Average	**97.71%**	**Very Good**

The overall student response reached 97.71%, which was categorized as Very Good. Students perceived the ZepQuiz-assisted assessment instrument as user-friendly, visually attractive, and helpful in facilitating their understanding of supply and demand through contextualized assessment items. Overall, these findings suggest that the developed instrument is practical and has been positively received for use in economics learning.

DISCUSSION

Development Process of the HOTS-Based Economics Evaluation Instrument Assisted by ZepQuiz

This study developed a HOTS-based economics evaluation instrument assisted by ZepQuiz by adopting the ADDIE instructional design model, which consists of analysis, design, development, implementation, and evaluation. The sequential nature of this model enabled each development stage to be reviewed and refined before proceeding to the next stage, ensuring that the final product corresponded with instructional needs. This finding is consistent with Branch (2009), who explains that the ADDIE model provides a systematic framework for developing educational products through continuous evaluation and revision.

During the analysis stage, classroom observations and interviews indicated that economics assessments were still predominantly conducted using conventional paper-based tests that mainly emphasized lower-order cognitive skills. Consequently, students had limited opportunities to practice critical thinking through activities involving analysis, evaluation, and decision-making. To address this issue, the developed instrument focused on cognitive levels C4, C5, and C6 of the revised Bloom's Taxonomy, enabling students to solve contextual problems related to demand and supply. The selected topic was considered appropriate because it requires students to interpret economic data presented in graphs, tables, and authentic market situations.

The design and development stages focused on constructing assessment items that were aligned with the Learning Outcomes (CP) and Learning Objectives (TP) of the Merdeka Curriculum. Initially, thirty multiple-choice HOTS items were prepared using contextual economic scenarios accompanied

by visual stimuli such as graphs and tables. These items were subsequently integrated into the ZepQuiz platform to create a digital assessment environment that was more interactive than conventional testing.

Before classroom implementation, the prototype underwent validation by experts in evaluation, subject matter, instructional media, and language. The validation results demonstrated that the instrument fulfilled the expected quality standards, with feasibility scores ranging from 81% to 100%. These findings indicate that the content, language, presentation, and technical aspects of the instrument were appropriate for classroom application.

Following expert validation, a limited trial was carried out to examine the psychometric quality of the developed items. The analysis showed satisfactory reliability (Cronbach's Alpha = 0.78), while most questions demonstrated acceptable validity, moderate difficulty, adequate discrimination power, and functional distractors. Based on these findings, twenty items were selected as the final evaluation instrument. The systematic validation and item analysis confirmed that the developed instrument was capable of providing consistent measurements while adequately assessing students' higher-order thinking skills.

Improvement of Students' Critical Thinking Skills Using the HOTS-Based Economics Evaluation Instrument Assisted by ZepQuiz

The implementation of the developed evaluation instrument was followed by an analysis of students' critical thinking performance using the N-gain score. The results revealed an average N-gain value of 0.717, which falls within the high improvement category. This finding indicates that students achieved better critical thinking performance after completing learning activities using the HOTS-based assessment instrument assisted by ZepQuiz.

The observed improvement may be explained by the characteristics of the assessment items, which required students to interpret contextual economic information, examine graphical and numerical data, evaluate alternative solutions, and formulate appropriate decisions. Rather than relying on factual recall, students were encouraged to apply analytical and evaluative reasoning when answering each question. These findings support Anderson and Krathwohl (2001), who emphasize that higher-order cognitive processes contribute to the development of critical and analytical thinking.

Furthermore, the integration of the assessment into the ZepQuiz platform created a more interactive evaluation environment. The digital interface encouraged students to participate actively throughout the assessment process while maintaining their concentration during task completion. Consequently, the developed instrument functioned not only as an assessment tool but also as a learning resource that facilitated the development of critical thinking through contextual economic problem solving.

Students' Responses to the HOTS Based Economics Evaluation Instrument Assisted by ZepQuiz

Students' perceptions of the developed evaluation instrument were also examined through a response questionnaire administered after the implementation stage. Overall, the questionnaire yielded a score of 97.71%,

which was categorized as Very Good, indicating that students responded positively to both the assessment instrument and the use of the ZepQuiz platform.

Most students agreed that the interface was visually appealing, easy to navigate, and supported independent completion of the assessment. They also considered that the inclusion of contextual cases, graphs, and tables made the demand and supply concepts easier to understand while encouraging more careful analysis before selecting answers.

The positive responses further suggest that incorporating digital technology into assessment activities can enhance students' engagement during the evaluation process. The interactive features available in ZepQuiz helped maintain students' attention and motivation while completing HOTS-oriented questions. Therefore, the developed instrument was well accepted by students and may serve as an alternative digital assessment tool for economics learning, particularly in assessing critical thinking skills.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study successfully developed a HOTS-based economics evaluation instrument assisted by ZepQuiz for the demand and supply topic using the ADDIE development model. The development process included the stages of analysis, design, development, implementation, and evaluation, resulting in a digital assessment instrument consisting of 20 selected multiple-choice HOTS questions and essay questions for pretest and posttest. The validation results from evaluation, media, content, and language experts indicated that the instrument met the feasibility criteria for classroom use. Furthermore, the item analysis confirmed that the selected questions possessed satisfactory validity, high reliability, appropriate difficulty levels, good discrimination indices, and effective distractors. The N-gain analysis showed a high level of improvement in students' critical thinking skills (mean = 0.717). In addition, students gave very positive responses toward the developed instrument, with an overall response percentage of 97.71%, indicating that the instrument was practical, engaging, and well accepted for economics assessment on demand and supply materials.

Recommendation

The developed HOTS-based evaluation instrument assisted by ZepQuiz can be used as an alternative digital assessment tool in senior high school economics learning, particularly for demand and supply materials. Future studies are recommended to implement the instrument on a larger sample involving different schools and learning topics to examine its broader applicability. Further development may also integrate more varied question formats and digital features to support the assessment of higher-order thinking skills in economics learning.

FURTHER STUDY

This study was limited to the development of a HOTS-based economics evaluation instrument assisted by ZepQuiz on the demand and supply topic in one senior high school. The development process included a limited trial for item analysis and implementation involving Grade X students. Therefore, the findings are limited to the research setting and participants involved. Future studies are recommended to implement the instrument in different schools with larger and more diverse samples, apply it to other economics topics, and examine its use in various digital learning environments to further support students' critical thinking skills.

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