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LMS-DRIVEN HOTS READING MODEL FOR HIGHER EDUCATION ENHANCEMENT

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Abstract: This research aims to implement the Learning Management System of the Learning Process for developing a reading instruction model based on HOTS. Conducted the research in a private university in Kuningan, West Java, Indonesia. At present, one of the private tertiary institutions in Kuningan during COVID-19 is conducting lectures in a virtual class using Moodle in the learning process with the e-class, a part of the LMS. With the implementation of a virtual class in the form of Moodle used by the students of a private university in Kuningan, it is hoped that it can improve the reading instruction model based on higher-order thinking skills. This research is a kind of research and development or Research and Development (R&D) to produce products and test the feasibility of products, where the products developed are in the form of a reading instruction model based on HOTS using the ADDIE development model (Analysis, Design, Development and Implementation, Evaluation). The results are very effective in using this model, as seen from the test results obtained by students in the class**.**

Keywords : *Learning Management System; Reading Instruction Model; HOTS; Virtual Class and Moodle; R&D*

INTRODUCTION

This study aims to implement the Learning Management System (LMS) in the learning process to develop a reading instruction model based on Higher-Order Thinking Skills (HOTS). The research was conducted in a private university in Kuningan, West Java, Indonesia. One of the private tertiary institutions in Kuningan, amid the COVID-19 pandemic, is conducting lectures in a virtual class using Moodle as part of the learning process with the e-class, which is a component of the LMS. Implementing a virtual class based on Moodle used by students at a private university in Kuningan is hoped to improve the reading instruction model based on Higher-Order Thinking Skills (HOTS). This study falls under the category of research and development, specifically research and development (R&D) to produce and assess the feasibility of products. The products developed take the form of a reading instruction model based on HOTS using the ADDIE (Analysis, Design, Development and Implementation, Evaluation) development model. In the analysis phase, the research understands the needs and challenges in the learning process, especially in developing higher-order thinking skills. Design involves detailed planning of the structure of the reading instructional model to be developed, considering the curriculum and student needs. The development phase involves creating and integrating the model into the LMS, in this case, Moodle. Then, in the implementation phase, the HOTS-based reading instruction model is applied in the virtual learning environment. An evaluation is conducted to measure the effectiveness of this model. The results show the effectiveness of using this model, as seen from the test results obtained by the students in the class. The evaluation results provide a deep understanding of how much this model can

improve students' reading comprehension and skills. Overall, this study highlights the implementation of technology in education through the LMS and focuses on developing a reading instructional model that promotes higher-order thinking skills. Thus, this research positively impacts higher education learning, especially amid the challenges of distance learning during the COVID-19 pandemic. Moodle is a prominent open learning management system (LMS) in online education. As an LMS, it is a digital platform designed to facilitate online learning and a viable alternative to traditional offline learning systems (Arman et al., 2022; Wihastyanang et al., 2014). The importance of LMS lies in its ability to foster interaction between instructors and students, transforming the educational landscape by providing a dynamic and versatile learning environment (Arman et al., 2022; Wihastyanang et al., 2014). This transformation is highlighted by a growing body of literature, such as the works of Arman et al. (2022) and Wihastyanang et al. (2014). Moodle has gained popularity among academics due to its diverse features, including forums, assignments, attendance tracking, virtual meetings, and extensive learning materials (Plümicke, 2014). Plümicke's (2014) findings underscore the multifaceted nature of Moodle, highlighting its role as a robust and adaptable tool for modern educators and learners.

Furthermore, Moodle's global appeal is enhanced by its support for over 120 languages, which allows users to customize their Moodle site according to their linguistic preferences and regional needs (Dougiamas & Taylor, 2003). The findings of Dougiamas and Taylor (2003) shed light on the user-friendly nature of Moodle, making it accessible and adaptable globally.

In educational technology, the LMS, as exemplified by Moodle, is emerging as a powerful tool capable of supporting interactive educational processes (Andreassen et al., 2020; Muhisn et al., 2020). These findings, as reported by Andreassen et al. (2020) and Muhisn et al. (2020), underscore the central role of LMS in shaping contemporary educational practices in line with broader trends in digital pedagogy.

As we move into the context of reading instruction, it becomes clear that students need to engage with textual content and cultivate essential life and career skills, as well as media and ICT skills. These skills collectively comprise the 21st-century skills, commonly referred to as Higher-Order Thinking Skills (HOTS), that are essential for thriving and interacting in the complex landscape of the 21st century. As outlined by Collins. (2014) and Sağsan et al. (2016), HOTS includes three basic categories: transfer, critical thinking, and problem-solving. Transfer involves the application of acquired knowledge, while critical thinking delves into reflective thinking, reasoning, investigation, exploration of viewpoints, understanding, synthesis, evaluation, comparison, and relationships. Finally, problem-solving encompasses the ability to navigate and solve complex challenges. In conclusion, Moodle as an LMS is a versatile and influential platform that revolutionizes online learning and supports interactive educational processes. besides that LMS can also be used to produce improvements in the quality of learning that can be measured based on several variables such as lecturer satisfaction, level of productivity, so that it can be seen the level of effectiveness of using LMS(Lewis et al., 2014; Luckyardi & Syaroni, 2020). Including 21st-century skills, particularly HOTS, in the context of reading instruction represents a holistic approach to education that recognizes the need for students to develop skills beyond traditional academic knowledge. The references cited provide a solid foundation that anchors these findings in the broader scholarly discourse on

LMS, HOTS, and the evolving landscape of education.

Exploring the development of reading subjects based on Higher-Order Thinking Skills (HOTS) within the learning process through a Learning Management System (LMS) at a private university in Kuningan is a novel endeavour that has not been undertaken before. This research is of great urgency, especially given its potential to significantly impact the negotiations for a private university in Kuningan. The university is implementing a technology-enhanced learning process using Moodle as an integral part of the broader LMS. At a general level, the urgency of this research lies in its ability to provide a viable solution for the cultivation of a reading subject grounded in higher-order thinking skills through the use of the Learning Management System. The contemporary educational landscape, characterized by technological advancements, underscores the need for innovative approaches to foster critical thinking and improve the overall quality of the learning process.

The specific needs that underscore the importance of this research are manifold:

1. Low levels of critical thinking among students:

   The research is prompted by recognizing the prevailing low level of critical thinking students exhibit in their learning process. It is imperative to address this issue to improve the student body's intellectual engagement and analytical skills.

2. Limited recognition of the importance of critical thinking:

   Another crucial aspect is the realization that the private university in Kuningan still needs to fully grasp the importance of critical thinking as a cornerstone for student success. Critical thinking is not just an academic exercise but a critical skill contributing to broader personal and professional development.

3. Alignment with student-centered learning policies:

   The research takes on additional significance in light of the regulations and policies that govern higher education. The current emphasis on student-centred learning requires the cultivation of higher-order thinking skills, making it imperative for the university to align its curriculum with these educational guidelines.

In essence, this research seeks to bridge existing gaps in the educational landscape to enhance students' critical thinking skills in the context of a technology-enhanced learning environment. By addressing these urgencies, the research aims to contribute to the academic discourse and to serve as a catalyst for positive change within the private university in Kuningan, fostering a more robust and student-centred learning environment.

LITERATURE REVIEW

In order to determine the state of the art for this study, the authors conducted a comprehensive literature review, examining critical works in the field. This process is essential to contextualize the research within the existing body of knowledge and identify gaps the current study aims to address. First, Thamrin and Agustin (2019) conducted a study that conceptualized variation in reading to enhance higher-order thinking skills (HOTS). However, it should be noted that their study provided only a partial exploration of the relevant concepts. In contrast, the present study is distinguished by its focus on developing a Learning Management System (LMS) based on the HOTS learning model. By integrating LMS technology into the learning process, the research aims to contribute a unique perspective and advance

the current understanding of promoting HOTS through innovative instructional models. Second, the work of Mursyid and Kurniawati (2019) examined HOTS instructional strategies used by English teachers in seven schools. In this study, the researchers focus on the tertiary level, specifically in English courses. Instead of investigating teaching strategies, the focus is on developing an LMS-based HOTS learning model tailored to the needs of tertiary education. This shift is crucial for extending the applicability of HOTS strategies to higher education, where the dynamics of learning and teaching are significantly different. Finally, Widyantoro at al. (2017) conducted a study that explored the development of higher-order thinking skills (HOTS)-oriented English textbooks. In contrast, the current study differs in that it focuses on the design and implementation of an LMS-based HOTS learning model tailored explicitly for tertiary-level English courses. While textbooks play a valuable role, integrating LMS technology into the learning model opens avenues for interactive, technology-enhanced learning experiences.

The literature review reveals the research landscape related to HOTS and reading variation. The identified studies (Thamrin & Agustin, 2019; Mursyid & Kurniawati, 2019; Widyantoro et al., 2017) provide valuable insights within their respective scopes. However, the current study aims to contribute to this knowledge base by developing a distinctive Learning Management System (LMS)-based HOTS learning model tailored for tertiary-level English courses, thus expanding the research horizon.

System (LMS)-based Higher-Order Thinking Skills (HOTS) in English courses within tertiary institutions. The synthesis of previous studies led to the researcher's conclusion that no such development initiative has been undertaken based on the current knowledge base. This revelation underscores the novelty and significance of the present research endeavour.

The current study is positioned to explore the development of learning and assessment models, explicitly focusing on integrating Higher-Order Thinking Skills (HOTS) into technology-enhanced English courses. This initiative aligns with the strategic research program of the Private University in Kuningan, which prioritizes research on the development of nature conservation and information technology-based creative economy. This institutional-level commitment encompasses five key areas, including conservation and community forests, the implementation of mobile computing, legal awareness and good governance, the development of learning and evaluation (relevant to this study), and the tourism sector of the regional economy. In the area of educational disciplines combined with technology, the current research focuses on the intricacies of developing a Higher-Order Thinking Skill (HOTS) learning model tailored explicitly for technology-based English language courses. The chosen platform for this model is Moodle, an integral part of the Learning Management System (LMS). This represents a deliberate effort to use technology to enhance the learning experience and develop higher-order cognitive skills in students.

Methodologically, this research is classified as a type of research and development (R&D), with the overarching goal of generating products and evaluating their feasibility. The products developed are manifested in this context as a High-Level Thinking Learning Model or HOTS, following the systematic framework of the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) development model proposed by Lee and Owens (2004). The ADDIE model provides a structured and iterative approach that ensures the thorough analysis, design, development,

implementation, and evaluation of the HOTS learning model.

In summary, this research project has strategic importance within the research priorities of the Private University in Kuningan, in line with the broader institutional commitment to conservation, information technology-based creative economy, and advancement in various vital sectors. The unique focus on developing a HOTS learning model in technology-enhanced English courses contributes not only to the academic discourse but also to improving teaching and learning practices at the intersection of technology and education.

METHOD

Research Stages

This study adopts a research and development (R&D) approach to creating and evaluating products that take the form of a reading subject-based Higher-Order Thinking Skills (HOTS) model. The development process follows the systematic framework provided by the ADDIE development model, which includes the analysis, design, development and implementation, and evaluation phases. Each phase plays a critical role in ensuring the effectiveness and feasibility of the final product.

1. Analysis:

   The initial phase involves a comprehensive analysis that includes a review of existing literature, a needs assessment, and identifying critical factors influencing the development of a HOTS-based reading instructional model. This phase lays the foundation for subsequent design and development decisions.

2. Design:

   Based on the findings from the analysis, the design phase focuses on planning the structure of the reading-learning model. This involves creating a design that addresses the identified needs, is consistent with the principles of HOTS, and integrates seamlessly with the existing educational framework.

3. Development and Implementation:

   With the blueprint in place, the development phase involves translating the conceptualized model into tangible products. In this case, the primary products are the syllabus, term plans, and the Moodle Learning Management System (LMS). The implementation phase involves the actual execution of the conceptualized model within the educational environment of the private university in Kuningan.

4. Evaluation:

   The effectiveness and feasibility of the developed reading subject-based HOTS model will be rigorously evaluated in this phase. Various evaluation tools and metrics will be used to measure the impact on both teachers and students. This iterative evaluation process allows for refinement and improvement based on the feedback gathered.

5. Final Product:

   The culmination of the research process results in the final product - an optimized HOTS model based on reading topics aligned with the educational goals of the Private University in Kuningan. This product is expected to improve the quality of reading instruction by integrating higher-order thinking skills.

Research Design and Rationale:

The research design incorporates a graphic representation using figures and frameworks to illustrate the sequential progression of the study. This visual aid enhances clarity and provides a roadmap for researchers and stakeholders.

Location, subject, and research object:

The study is located in a private university in Kuningan, West Java. The subjects are the course lecturers, and the research object is the syllabi, semester learning designs, and the Moodle Learning Management System (LMS). This focused approach ensures that the research findings are contextually relevant and directly applicable to the university's educational environment.

Data collection, processing, and analysis procedures are fundamental components of research methodology and play a key role in ensuring the robustness and reliability of the study's findings. The systematic execution of these processes involves the methodical collection of information, applying appropriate analytical tools, and interpreting results to extract meaningful insights. The rigour and transparency maintained throughout these processes contribute significantly to the overall credibility of the research.

a. Data Collection Procedures:

The first step in this research involves collecting pertinent data through a two-pronged approach. Observations are conducted to gain insight into the actual learning processes of the lecturers responsible for the courses at the private university in Kuningan. This on-site observation allows for a holistic understanding of the educational dynamics. In addition, a questionnaire will be distributed via Google Forms focusing on curriculum data, lesson plans, and technology integration. This multi-faceted data collection strategy ensures a comprehensive understanding of implementing Higher-Order Thinking Skills (HOTS) within the learning environment.

b. Data Processing:

Once the data are collected, they are carefully processed to enhance their usefulness and clarity. Processing involves three key steps. First, in the preparation phase, each piece of information is carefully examined, selected, and sorted into distinct control and experimental classes. Only valid and relevant information proceeds to the next stage. Second, the processing stage is characterized by the presentation of data in a systematic and meaningful way. This strategic presentation ensures the data is prepared for seamless analysis in the next phase. Third, the inference phase marks the final step in data processing, culminating in formulating high-level conclusions. This stage is critical in determining whether the data are suitable for further analysis.

The sequential nature of these data processing procedures is designed to maintain the integrity of the information collected, ensuring that it is reliable and valid. This meticulous approach facilitates a deeper understanding of the learning processes and lays the groundwork for the subsequent analysis phase.

In essence, the outlined procedures for data collection, processing, and analysis underscore the methodological rigour of this research. By adhering to these systematic steps, the study aims to provide a solid foundation for drawing informed conclusions and contributing valuable insights to the broader discourse on integrating higher-order thinking skills into educational practice.

Software

The central software underpinning this study is Moodle, a versatile platform that serves as the technological backbone for facilitating interactive virtual engagement among educators. Moodle provides a dynamic environment in which educators can interact virtually, collaborate, contribute to content development, and take advantage of available facilities. This technological infrastructure transforms traditional face-to-face teaching and learning activities into a virtual modality,

ensuring adaptability to contemporary educational paradigms. As the core software, Moodle empowers educators to transcend physical constraints and foster a collaborative and enriched digital space for teaching and learning. Teachers can seamlessly contribute to content creation, share resources and engage in meaningful interactions, replicating the collaborative atmosphere of traditional classrooms in the virtual realm. This approach is consistent with the evolving landscape of education, where technology enables innovative pedagogical practices.

However, using Moodle effectively requires optimal hardware devices to ensure a smooth and efficient learning experience. In this context, researchers emphasize the importance of having adequate hardware devices, including PCs, notebooks, and smartphones. These devices, equipped with the necessary specifications, are essential tools that facilitate seamless connectivity to Moodle and support the full functionality of the Learning Management System (LMS).

In addition, a robust Internet network connection is considered a fundamental requirement for successfully implementing the Learning Management System. Reliance on a stable, high-speed Internet connection ensures that educators and students can take full advantage of the features and interactivity offered by Moodle. It is this digital infrastructure that makes the virtual replacement of face-to-face teaching not only feasible but optimal. As the researchers conduct their study within the university environment, the emphasis on these technological requirements becomes paramount. As a hub of educational activity, the university environment requires a reliable technological ecosystem to integrate Moodle seamlessly into the pedagogical framework. The researchers, therefore, emphasize the importance of recognizing and meeting these hardware and connectivity requirements in order to realize the full potential of the Learning Management System in improving the quality and accessibility of education within the university landscape.

Analisis System

The application of the Learning Management System at the private University in Kuningan is designed to facilitate the learning process in order to develop the HOTS learning model. The following is a use case diagram of the Learning Management System used in this study

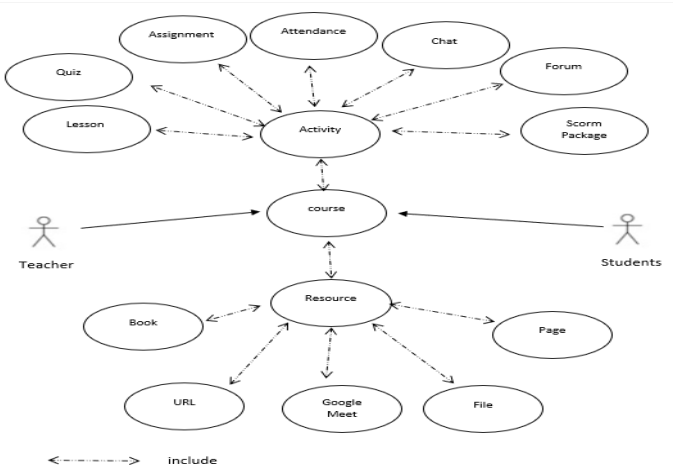

Figure 1 : Use Case Diagram of LMS Implementation

At its core, the use of Moodle-based software is a transformative initiative that uses technology to redefine the dynamics of teaching and learning. However, careful consideration of the associated hardware and connectivity requirements is required to ensure a seamless and effective implementation, especially in the university

context where the research is being conducted.

Research data on the conceptualization and design of the Learning Management System (LMS)--based Higher-Order Thinking Skills (HOTS) learning model, specifically using Moodle, within a private university in Kuningan were carefully collected through a combination of observations and questionnaires. The multifaceted nature of the data collection ensures a comprehensive understanding of the current landscape, encompassing aspects of planning, design, and integration of HOTS principles into the educational framework. The primary sources of research data are the insightful observations made by the researchers, which provide a first-hand account of the learning processes unfolding within the university. These observations serve as a qualitative lens through which the practical implementation of HOTS is evaluated. In addition, the researchers distributed a questionnaire to relevant stakeholders, such as faculty involved in course delivery. This questionnaire, administered through a robust platform such as Google Forms, captures quantitative data related to the implementation of HOTS, syllabus adherence, the presence of RPS (Rencana Pelaksanaan Pembelajaran or Learning Implementation Plan), and the use of Moodle technology (LMS). In order to derive meaningful insights from the collected data, the researchers use a systematic analysis technique known as categorization. This involves a meticulous process of selection and sorting, whereby the data is divided into distinct categories based on specific criteria. The overarching goal is to determine which institutions have effectively incorporated HOTS principles into their teaching methodologies based on syllabus alignment, adherence to the Learning Implementation Plan (RPS), and successful integration of Moodle technology.

The subsequent analysis phase revolves around a detailed examination of the categorized data, focusing on those instances where HOTS was effectively implemented. The research takes a developmental approach, using the findings to inform the planning concepts and learning design of the HOTS learning model. This comprehensive approach includes refining curricula, lesson plans, and the strategic use of technology through Moodle. By examining the data through the HOTS learning model development approach lens, the researchers aim to distil valuable insights into the efficacy and practicality of integrating higher-order thinking skills into the university's educational framework. The resulting analysis serves to evaluate the current state of implementation and inform future strategies for optimizing the HOTS learning model to ensure its relevance and impact within the private university in Kuningan.

RESULTS AND DISCUSSION

The initial phase of data analysis began with the meticulous recording of data from various sources, including tests (both pre-test and post-test), treatment sessions, and questionnaires. This comprehensive approach aimed to capture a holistic view of the learning processes and outcomes associated with the development of a reading subject based on Higher-Order Thinking Skills (HOTS). To ensure a robust analysis, the researcher actively participated in observing the reading class on four separate occasions, adding a qualitative dimension to the overall data collection.

The chronological sequence of activities began with the administration of the pre-test, followed by the implementation of the treatment and the distribution of the questionnaires, and concluded with the post-test assessment of the participants. This

structured approach allowed the researcher to measure the impact of the treatment on the participants' reading skills and effectively capture the nuances of the learning journey. Upon completion of the test-related data collection, the researcher moved into the analysis phase, which involved several vital steps. The test results were methodically entered into the Statistical Package for the Social Sciences (SPSS) software, version 25, which facilitated a comprehensive and systematic analysis. This process involved performing three tests: the regular distribution test, the homogeneity of variance test, and the independent samples t-test. The standard distribution test, in particular, was used to determine whether the collected data exhibited a typical distribution pattern, providing critical insight into the statistical properties of the data.

At the same time, the questionnaire data underwent a separate analysis process. Using Microsoft Excel, the researcher applied a meticulous approach to calculating and analyzing the questionnaire responses. This step ensured a nuanced understanding of participants' perceptions and experiences, adding a qualitative layer to the quantitative analyses derived from the test results. The meticulous execution of these analytical steps speaks to the rigour embedded in the research methodology. Using various statistical tests combined with qualitative observations contributes to a well-rounded analysis beyond numerical scores. The multifaceted approach enhances the credibility of the findings and allows for a comprehensive exploration of the factors that influence the development of a reading subject based on HOTS. In summary, the research design and subsequent data analysis underscore a methodical and comprehensive approach to evaluating the effectiveness of HOTS-based reading literacy development. Integrating quantitative test results and qualitative observations ensures a nuanced understanding of learning outcomes and contributes valuable insights to the broader discourse on educational methodologies and assessment strategies

Table 1 : Tests of Normality

	Kolmogorov-Smirnova		
Statistic	**Df**	**Sig.**	
Pretest_con	.162	22	.139
Pretest_ex	.157	22	.168

Table 1 provides a critical snapshot of the pretest results in both the experimental and control classes, shedding light on the normality of the data distribution. The significance (Sig.) scores, as highlighted in the table, serve as key indicators in determining the normality of the data. In the control class, the Sig. The score is 0.139, which exceeds the significance level (0.05), indicating that the data in the control class follow a typical distribution pattern. Similarly, in the experimental class, the Sig. The value is 0.168, confirming the normality of the pretest data in this group. The second evaluation measure performed is the pretest homogeneity of variance test, designed to analyze the normality of the distribution. The result of this test is considered normal, as evidenced by a significance value (0.533) higher than the predetermined significance level (0.05). This result indicates that the null hypothesis (Ho) is accepted, which allows the t-test to be performed. The homogeneity of variance test further emphasizes the comparability of the pretest variances between the experimental and control classes. The final analytical step involves the application of the Independent Samples T-test. This test serves the critical purpose of measuring the significant difference in scores between the pretests conducted in the experimental and control classes prior to the

implementation of any treatment. The t-test is a powerful tool for determining whether there are significant differences in the baseline scores, setting the stage for understanding the impact of the subsequent treatment.

The entire analytical process, guided by the data presented in Table 1, culminates in a comprehensive assessment of normality, homogeneity of variance, and potential differences in pretest scores between the experimental and control groups. Careful attention to statistical significance ensures the robustness and reliability of the results. The use of these statistical

The entire analytical process, guided by the data presented in Table 1, culminates in a comprehensive evaluation of normality, homogeneity of variance, and potential differences in pretest scores between the experimental and control groups. Careful attention to statistical significance ensures the robustness and reliability of the results. Using these statistical measures contributes to a nuanced interpretation of the data and paves the way for meaningful insights into the effects of the treatment on the experimental group

Table 2 : Group Statistics

Class	N	Mean
Pretest experiment class	26	72.35
Control class	22	71.82

In Table 2, the mean scores of the pre-tests are presented, providing insight into the initial performance levels of the experimental and control classes. The mean score for the experimental class is 72.35, while the mean score for the control class is 71.82. The minimal difference between these mean scores suggests no statistically significant difference in pre-test scores between the two classes at the outset. The analysis continues by examining the results of the Independent Samples T-test conducted on the pre-test scores of the experimental and control classes. The hypothesis test for the pre-test in the experimental class shows a significance value (2-tailed) of 0.239, which exceeds the predetermined threshold of 0.05. Similarly, the hypothesis test for the pre-test in the control class yields a significance value (2-tailed) of 0.237, which also exceeds the significance level (0.05).

These results indicate no statistically significant difference in pre-test scores between the experimental and control classes, as the significance values exceed the predetermined alpha level of 0.05. Any observed differences in mean scores are likely due to chance rather than a meaningful treatment effect. As the analysis proceeds to the first post-test, the focus is on assessing the normality of the data distribution. This initial step is critical to ensuring that subsequent statistical analyses are performed on data that follow a typical distribution pattern. This emphasis on normal distribution underscores the methodological rigour of the analysis and contributes to the reliability and validity of subsequent statistical tests and interpretations

Table 3 Tests of Normality

Kolmogorov-Smirnova

Statistic	Df	Sig.	
Pretest_con	.127	22	.200*
Pretest_ex	.147	22	.200*

In Table 3, the focus shifts to examining the post-test results, particularly the normality distribution test. Significance (Sig.) scores are reported for both the control and experimental classes, indicating the normality of the data distribution. For the control class, the Sig. The score is 0.200, and for the experimental class, it is also 0.200. In both cases, these Sig. Scores exceed the predetermined significance level (0.05), indicating that the data from both groups have a regular distribution pattern. This confirmation of normality is critical because it ensures that subsequent statistical analyses will be performed on data that follow the expected distribution patterns. The next step involves the homogeneity of variance test for the post-test scores. This test informs the t-test procedure by assessing whether the variance in the data between the experimental and control groups is equal and homogeneous. The significance level for this test is set at 0.05. If the asymp. Sig. is more significant than 0.05, the null hypothesis (Ho) is accepted, indicating that the variance in the data between the two groups is indeed equal and homogeneous.

The third step in the analytical process is the Independent Samples T-test, an essential procedure used to detect any significant differences between the post-test scores of the experimental and control classes. This test provides valuable insight into the effectiveness of the treatment implemented by measuring the impact on the two groups. Careful attention to statistical significance throughout these steps underscores the rigour and reliability of the analysis. By confirming normality and homogeneity of variance, the study establishes a strong foundation for subsequent comparative analyses, ensuring that any observed differences in post-test scores are not due to chance but are statistically meaningful. In particular, the Independent Samples T-test serves as a robust tool for evaluating the impact of the treatment on the experimental group compared to the control group, adding valuable insight to the overall research findings

.Tabel 4 .T Test

Group Statistics

Class	N	Mean
post score experiment class	26	77.92
Control class	22	74.59

Table 4 provides critical insight into the post-test results by comparing the mean scores between the experimental and control classes. The mean score for the experimental class is 77.92, while the mean score for the control class is 74.95. This marked difference in mean scores indicates a significant divergence in post-test performance between the two groups. The higher mean score in the experimental class compared to the control class suggests a positive impact of the treatment. This divergence in scores implies that the treatment implemented, which focused on teaching reading based on Higher-Order Thinking Skills (HOTS), was successful and contributed to the improved post-test scores in the experimental class.

The next step involves a detailed examination of the results derived from the Independent Samples T-test conducted on the post-test scores of both the experimental and control classes. The hypothesis test for the post-test in the experimental class shows a significance value (2-tailed) of 0.00001, which is significantly lower than the predetermined threshold of 0.05. Similarly, the Independent Samples T-test for the post-test in the control class yields a significance value (2-tailed) of 0.00001, which is also below the 0.05 level. The rejection of the null hypothesis (Ho) and the acceptance of the

alternative hypothesis (Ha) emphasizes that there is a statistically significant difference between the post-test scores in the experimental and control classes.

This statistical significance is consistent with the observed difference in mean scores. It confirms that the treatment, which included reading instruction based on HOTS, produced superior post-test scores in the experimental class. It can be concluded that the experimental class that received the treatment showed a more significant improvement in post-test scores than the control class. Therefore, it can be confidently asserted that HOTS-based reading instruction effectively develops students' reading skills, as evidenced by the superior performance of the experimental class. The results of this analysis provide valuable empirical evidence to support the effectiveness of the Higher-Order Thinking Skills instructional approach.

CONCLUSION

The culmination of this research journey brings forth significant findings that address the core objectives of exploring the effectiveness of a reading subject based on Higher-Order Thinking Skills (HOTS) using a Learning Management System (LMS) and unravelling the intricacies of developing a reading instructional model based on HOTS. The evidence, supported by the results of an independent t-test, provides a comprehensive understanding of the impact of the treatment implemented. Statistical analysis of the experimental class that received the treatment through the Cake application revealed a notable improvement in mean scores. The pre-test mean score for the experimental class was 72.35, and after the intervention, the post-test mean score increased significantly to 77.92 (see Table 4.1). Conversely, the control class, which received no treatment from the reading specialist, showed a more modest progression. The pre-test mean for the control class was 71.82, and the post-test mean showed a moderate increase to 74.59 (see Table 4.2). This significant difference in post-test means suggests a positive impact of the treatment, as the experimental class outperformed the control class.

The statistical significance is further underscored by the results in Table 4.1, where the significance (Sig.) values (2-tailed) for both the experimental and control classes were significantly lower than the predetermined significance level ($0.00001 < 0.05$). Acceptance of the alternative hypothesis (Ha) indicates a significant difference in mean scores between the pre-test and post-test in both classes. This statistical validation provides strong support for the conclusion that the treatment, encapsulated in the HOTS-based reading instruction, resulted in a significant improvement in student performance. Delving deeper into the qualitative aspect of the students' experiences, the research uncovered several noteworthy findings. Students in the experimental class showed increased interest, curiosity, and enthusiasm during the teaching-learning process. The HOTS-based reading lesson was informative, creative, and attractive, increasing students' vocabulary in reading texts. The inclusion of activities such as presentations after reading texts or articles contributed to an engaging and exciting learning environment. The consensus among the students in the experimental class confirmed the effectiveness of reading instruction based on HOTS in increasing their comprehension and engagement with reading topics.

In conclusion, the amalgamation of quantitative and qualitative findings supports the effectiveness of a reading subject based on HOTS using LMS. The statistical evidence shows a significant improvement in post-test mean scores for the experimental class, highlighting the positive impact of the treatment. The qualitative findings provide a rich narrative of increased student engagement and enthusiasm, further reinforcing the pedagogical value of integrating HOTS principles into reading instruction. This study contributes valuable knowledge to the educational landscape, advocating for innovative approaches that improve academic performance and foster a

dynamic and engaging learning environment for students.

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