Enhancing Secondary Students' Reading Comprehension Through Local Culture-Based Website: A Classroom Action Research

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ABSTRACT

Objective: This study investigates the impact of integrating local culture-based website applications on improving the reading comprehension skills of ninth-grade students. **Method:** Conducted as classroom action research, the study involved 114 students and one English teacher as a collaborator. Over five meetings, students engaged with culturally relevant texts designed to enhance their comprehension, vocabulary, and grammar skills. The research included a pre-test, three treatment sessions using the website application, and a post-test, followed by a questionnaire on students' perceptions of the application. **Results:** The findings show that the average post-test score rising from 55.6 to 73.4. The decrease in the standard deviation from 12.8 to 9.5 suggests a reduction in performance disparities. A paired sample t-test confirmed the statistical significance of these gains ($t(114) = 12.67$, $p < 0.001$), and the large effect size (Cohen's $d = 1.62$) indicates a substantial impact of the intervention. The students' responses to the questionnaire reflected a positive attitude toward the use of the application, highlighting its effectiveness and cultural relevance. **Novelty:** These results suggest that incorporating local cultural content into educational tools can significantly enhance student engagement and learning outcomes.

INTRODUCTION

Reading comprehension is a critical skill for students, especially in a globalized world where English proficiency often determines academic and professional opportunities. Reading English might be tough for EFL learners since reading is more than just matching words to meanings or translating texts between languages (Chinpakdee and Gu, 2024). The main concern in English as an international language learning is which culture to teach and which communities should be represented as users and proprietors of English (Keles and Yazan, 2023). The representation of these cultures in language textbooks and learning materials informs instructors and learners about the envisioned communities of the English-speaking globe. In line with this, Wang (2023) has incorporated cultural topics from Vietnam and Indonesia into Taiwanese university English as a foreign language (EFL) class resulted in increased intercultural competence and improved English learning outcomes.

While Hossain (2024) recommended for language educators to create culturally inclusive and effective language learning environments; the centralized, top-down policy-making approach in Iran's Ministry of Education creates a gap between planning and practice in ELT, as decisions made by a few overlook the practical realities faced by teachers (Rahimi & Sharifian, 2020). On the other hand, many research aims to identify the most effective strategies to integrate content and language learning (Llinares and McCabe, 2023). In Indonesia, however, many secondary students struggle with reading comprehension in English due to various factors, including the limited exposure to

authentic and culturally relevant reading materials. Traditional teaching methods often fail to engage students, leading to a gap in comprehension skills that hampers their overall language development. To address this issue, integrating local culture into English language teaching has been proposed as a strategy to make learning more relatable and meaningful for students.

In the 21st century, Generation Z learners mostly use ICT for learning (Mohamad, 2020). The advent of digital technology offers a promising avenue for such integration. Integrating technology in English language learning aids learners by allowing for collaborative learning, individual learning, opportunities to write, talk, listen, and read in English, and demonstrating innovative teaching methods (Rintaningrum, 2023). Specifically, the development of website applications that incorporate elements of local culture can provide a dynamic and interactive platform for improving students' reading comprehension. These applications can present reading materials that resonate with students' cultural backgrounds, thereby increasing their motivation and engagement with the content. However, despite the potential of this approach, there is a lack of empirical research that examines the effectiveness of local culture-integrated website applications in enhancing reading comprehension skills among Indonesian secondary students.

Existing research on English language teaching in Indonesia has predominantly focused on traditional methods, such as grammar-translation and audio-lingual approaches, with limited attention to the integration of local culture in digital platforms. Some studies have explored the use of multimedia and interactive tools in language teaching, yet they often overlook the cultural dimension, which is crucial for contextualizing language learning in a way that is relevant to students.

Moreover, while there is a growing body of literature on the use of educational technology in language learning, the majority of these studies are conducted in Western contexts, where the cultural content is vastly different from that of Indonesia. This creates a significant gap in the research, as the effectiveness of culturally integrated website applications in non-Western settings, particularly in Indonesia, remains underexplored.

Tolibayev & Menlimuratova (2023) states that educators can enhance language learning by facilitating social interactions, utilizing technology to connect students with native speakers and authentic resources, promoting cultural engagement, and providing support within a cultural context.

The current state of research on integrating local culture into English language teaching is still in its nascent stages. However, there is a recognition of the importance of culturally responsive teaching practices in improving students' learning outcomes. Recent studies have highlighted the role of cultural relevance in increasing student engagement and comprehension, suggesting that culturally integrated materials can bridge the gap between students' existing knowledge and new language skills. Additionally, the interactions, tools, and support available to learners can significantly influence their language development (Tolibayev & Menlimuratova, 2023).

In this context, the development of a website application that incorporates elements of Indonesian culture presents an innovative approach to enhancing reading comprehension. Thus, this study aims to contribute to the literature by providing empirical evidence on the effectiveness of using local culture-integrated website applications in teaching English. The findings are expected to fill the existing research gap by offering a context-specific analysis of how culturally relevant digital tools can improve reading comprehension among Indonesian secondary students. Furthermore, this research has broader implications for the field of language education, as it underscores the importance of cultural relevance in the development of educational

technology. The outcomes of this study could inform future curriculum design and pedagogical strategies, particularly in multicultural and multilingual contexts.

In conclusion, this research seeks to bridge the gap between traditional teaching methods and the growing need for culturally responsive educational technology. By integrating local culture into a digital platform for English language teaching, this study aims to boost reading comprehension skills among Indonesian secondary students, thereby contributing to their overall language proficiency and academic success.

Cultivating cultural values from an early age has an important part in education. It is because the development of a child's personality from an early age shapes their character in life. Research suggests that embedding local culture into English language teaching materials can significantly enhance students' engagement and comprehension (Raihani and Unsiah, 2024). As an English teacher, it is critical to perform language learning activities that incorporate local culture. In line with this, integrating local culture into English learning would help learners to experience more relevant English language learning while also introducing them to indigenous cultures within their own country and worldwide (Ratminingsih and Budasi, 2018). Future teachers need an integrated education to properly function in the language and content teaching profession (Axmadjonova et al., 2024). Lack of cultural exposure might hinder the development of cultural competency, which is essential for language learning in today's interconnected world (Rahimi & Sharifian, 2020). This approach allows learners to connect with familiar content, reducing cognitive load and making reading tasks more approachable. When texts reflect students' own cultural contexts, they are more likely to retain interest and achieve better comprehension outcomes. Besides, creating inclusive environments that respect learners' language identities promotes a sense of belonging among students from varied backgrounds (Sanger & Gleason, 2020).

The use of local culture aligns with content-based instruction, which focuses on the information students need to learn rather than a specific syllabus (Wang, 2023). Pathomchaiwat & Thongrin (2024) emphasize the necessity of incorporating cultural awareness and cross-cultural understanding into English reading education to successfully prepare students for 21st century learning. This is especially true when vocabulary and concepts align with students' prior knowledge, which is often a barrier when dealing with foreign contexts. However, even though the teachers included local traditions into their teaching materials, those integrations may be better explored; what is more important is to incorporate culture into the primary content, such as texts, movies, or images, followed by information on that culture (Azhary, 2024).

The inclusion of local culture in learning materials not only aids in reading comprehension but also supports the development of other language skills, such as writing and speaking. Students are more motivated to participate when the content resonates with their cultural background. Moreover, integrating local cultural elements has been shown to enhance students' confidence in using English, as it makes the language feel less foreign and more accessible.

Integrating a local culture-based website application into English reading instruction offers a powerful approach to improving students' reading comprehension skills. By leveraging a digital platform, this method combines the benefits of culturally relevant content with the interactive and engaging nature of technology. Culture plays a significant role in language acquisition and communication efficacy, which educators must actively integrate. Despite ongoing problems, educators can create culturally inclusive and effective language learning settings by using intercultural competence, diversifying course materials, and embracing technology (Hossain, 2024).

When English reading materials are grounded in the students' own culture, they become more relatable and easier to comprehend. A website application that curates reading texts based on local culture can help students connect with the material, thus improving their understanding and retention. Studies have shown that when students see their own culture reflected in the content, they are more motivated to engage with the material, leading to better reading outcomes.

A website application can offer interactive features such as quizzes, vocabulary games, and multimedia content that enrich the reading experience. These features can be tailored to include elements of local culture, further enhancing comprehension. For instance, a digital platform can provide context-specific glossaries, visual aids, or culturally relevant background information that supports students as they navigate more complex texts. The integration of these features ensures that students not only read but also interact with the content in a way that deepens their understanding.

The use of a website application allows for easy access to reading materials anytime and anywhere, making learning more flexible. The reason of choosing online materials over printed textbooks due to a lack of EFL textbooks that aligned with the course objectives as well as online resources provided authentic content for students to engage with in real-life (Wang, 2023). Furthermore, Online resources and accessible educational materials have enabled greater access to information and learning. This is particularly beneficial in diverse classrooms where students might progress at different rates. The application can offer personalized reading paths based on individual comprehension levels, ensuring that all students are adequately challenged and supported. The inclusion of local cultural references in the application ensures that even personalized learning experiences remain relevant and engaging for the students.

In conclusion, a local culture-based website application can significantly enhance English reading comprehension by providing culturally relevant content in an interactive and accessible format. This method not only improves students' reading skills but also fosters a deeper connection to their own culture, promoting both linguistic and cultural fluency.

The local culture integrated into the website application for teaching English in this study is specifically derived from the cultural heritage of Kuningan City, located in Kuningan Regency, West Java Province, Indonesia. This region is rich in cultural traditions, folklore, and local wisdom, which are deeply embedded in the daily lives of its people. By incorporating elements from Kuningan's local culture into English reading materials, the application aims to make learning more relevant and engaging for students who are familiar with these cultural references.

The major reason integrating Kuningan local culture in this research is that the researcher is originate from Kuningan, and the site and participants involved are in Kuningan. Studies indicate that students who engage with culturally familiar content are better able to generate ideas, which improves their overall language proficiency. This approach is beneficial in not only improving reading comprehension but also fostering a deeper understanding and appreciation of their own culture while learning a new language. This dual focus helps students prepare for global communication while remaining rooted in their local identity.

The reading texts may include stories from Kuningan's folklore, such as the legends of Mount Ciremai, which is a significant cultural symbol in the region. These stories not only preserve local history and values but also provide contextually rich material for English language learning. Furthermore, Content related to traditional Kuningan festivals, such as "Seren Taun" (a traditional harvest festival), can be used to create reading passages that both teach English and promote cultural understanding. Students

can relate to these practices, making it easier for them to grasp the language while learning more about their own cultural identity.

The application might also feature texts that depict daily life in Kuningan, including agricultural practices, local crafts, and community activities. This inclusion helps students connect with the content on a personal level, enhancing their comprehension and retention of the material.

By focusing on the local culture of Kuningan, the website application not only enhances students' reading comprehension skills but also reinforces their cultural identity, making learning both educational and culturally meaningful. This approach ensures that the learning process is deeply rooted in the students' own experiences and environment, thereby facilitating a more effective and enjoyable educational experience.

RESEARCH METHOD

This study employs the Classroom Action Research (CAR) approach which involves four main stages that recur in a cycle: Planning, Action, Observation, and Reflection (Mertler, 2024), which as follows:

1. Planning: In this stage, the researcher, along with the classroom teacher as a collaborator, develops a lesson plan focused on improving students' reading comprehension using a local culture-based application. The plan includes setting learning objectives, developing teaching materials, and preparing research instruments.

2. Action: This stage involves the implementation of the planned activities over three learning sessions accessible at https://kamuskun-vynn.glide.page/dl/245b4e . The classroom teacher carries out the lessons according to the agreed plan, while the researcher observes the process and outcomes of the learning activities.

3. Observation: During the action stage, the researcher and the classroom teacher observe to collect data on the learning process and student participation. The purpose of this observation is to identify problems, obstacles, and successes that occur during the implementation.

4. Reflection: After each session, the researcher and the classroom teacher reflect together to evaluate the observation results and determine whether any adjustments or improvements are needed for the next cycle. This reflection is also used to assess the effectiveness of the actions taken in enhancing students' reading comprehension.

After completing the cycle, the final outcome of this research is expected to provide insights into the effectiveness of using a local culture-based application to improve students' reading comprehension skills.

Ethical approval for this research was obtained from the site of study. Informed consent was managed through clear communication with both the English teacher and the participating students' parents or guardians. The English teacher, who plays an active role as a collaborator, was involved not only in the planning process but also in implementing the actions within the classroom. As the primary instructor, she applied the planned methods and provided valuable feedback during the reflection stage. This collaboration is essential for ensuring that the interventions are suitable for the classroom context and effectively meet the students' needs.

The study also involved 114 ninth-grade secondary students, comprising 52 boys (46%) and 62 girls (54%). Each student's participation was voluntary, and their rights to withdraw at any time were emphasized throughout the process.

To ensure the reliability of the instruments used in this study, a piloting phase was conducted prior to the main research. This phase involved testing the observation sheets and questionnaires with a small group of students to assess their clarity, relevance, and effectiveness. The instruments used in this study include:

1. Observation Sheets: These instruments were designed to systematically record student activities during the learning process. They focused on key areas such as student engagement in reading activities, comprehension of the material, and participation in class discussions. The piloting helped refine the criteria used for assessing these aspects, ensuring that the sheets accurately captured the dynamics of classroom interactions.

2. Reading Comprehension Tests: Administered both before and after the intervention, these tests measured students' improvements in reading comprehension skills. The tests were evaluated for reliability through consistency checks, ensuring that they effectively reflected the students' comprehension levels.

3. Questionnaires: These were developed to gather data on students' attitudes toward the use of the local culture-based application in learning. The piloting phase allowed for adjustments based on student feedback, enhancing the validity of the questions and ensuring they accurately measured the intended attitudes.

Overall, the piloting of these instruments not only increased their reliability but also contributed to the methodological transparency of the study, ensuring that the findings are robust and credible.

The data collected through various instruments are analyzed using both qualitative and quantitative approaches.

1. Qualitative Analysis: Data from observation sheets was analyzed to identify emerging themes related to student engagement towards the application. This process involves coding the data, categorizing, and interpreting to find patterns and trends.

2. Quantitative Analysis: The results of the reading comprehension tests were analysed using descriptive statistics to observe changes in scores before and after the intervention. Furthermore, the data taken form questionnaire was also analysed quantitatively in order to explore their attitude towards the application. The result, then, was described by using Table 1.

Table 1. level of students' attitude level

Scale	Mean Score
Strongly Positive Attitude	87 -100
Positive Attitude	71 - 86
Normal	54 - 70
Negative Attitude	37 – 53
Strongly Negative Attitude	20 - 36

RESULTS AND DISCUSSION

Result

Qualitatively, this study aimed to highlight the Students' Activities During the Learning Process based on the observation taken. Furthermore, quantitatively, this study aimed at evaluating the effectiveness of a local culture-based website application in improving the reading comprehension skills of ninth-grade students. The findings, derived from pre-test and post-test results, as well as from student attitude surveys,

indicate that the intervention had a significant and positive impact on students' learning outcomes.

1. Students' Activities during the learning process

The research involved one English teacher as a collaborator and 114 ninth-grade students, comprising 52 boys (46%) and 62 girls (54%). The study was conducted over five meetings; each designed to assess and improve the students' reading comprehension skills through the use of a local culture-based website application.

The first meeting focused on administering a pre-test to evaluate the students' initial reading comprehension skills. The test consisted of 60 multiple-choice questions derived from the three texts selected for the study. The test was taken online. The results indicated that students had varying levels of comprehension, with some struggling particularly with vocabulary and grammatical structures in the text. This baseline assessment provided a clear starting point for measuring the effectiveness of the subsequent interventions.

During the second, third, and fourth meetings, the students engaged in reading activities using three different texts that were culturally relevant to their local context in Kuningan, West Java. The website application facilitated these activities, which included reading comprehension, vocabulary development, and grammar identification.

In Reading Comprehension, Students were guided through the texts with a focus on understanding the main ideas, supporting details, and overall text structure. Furthermore, related with Vocabulary Development, the Activities were designed to help students identify and understand key vocabulary within the context of the texts. This was crucial for improving their ability to comprehend more complex passages. Regarding Grammar Identification, Students were also tasked with recognizing and analyzing grammatical structures used within the texts, helping them to better understand sentence construction and improve their language skills.

The learning activities provided through the website application were instrumental in maintaining student engagement and ensuring that the content was relatable and meaningful to them. The use of local cultural references made the learning process more enjoyable and accessible, which was reflected in the students' increasing confidence and participation.

The final meeting involved a post-test that mirrored the structure of the pre-test, with 60 multiple-choice questions derived from the three chosen text. The test was taken online. The purpose of this test was to evaluate the students' reading comprehension after the treatment sessions. The results showed a significant improvement in the students' comprehension scores, indicating that the use of the local culture-based website application had a positive impact on their learning.

Additionally, a questionnaire was distributed to gather students' attitude towards using the website application. The responses were overwhelmingly positive, with many students noting that the culturally relevant content made the texts easier to understand and more engaging. The interactive features of the application were also highlighted as beneficial in enhancing their learning experience.

The research findings suggest that integrating local culture into English reading instruction, facilitated by a website application, effectively improves students' reading comprehension. The culturally relevant content helped students connect with the material, and the structured activities within the application supported vocabulary and grammar development. The positive feedback from students further reinforces the effectiveness of this approach in enhancing their overall reading performance.

The analysis of students' activities during the learning process provides valuable insights into how the local culture-based application influenced their engagement and interaction with the reading materials. The study involved five meetings, with the first being a pre-test, followed by three treatment sessions using the application, and concluding with a post-test and a questionnaire on students' perceptions. The involvement of one English teacher as a collaborator further ensured that the instructional strategies were aligned with the classroom context.

2. Students' Reading Performance

To evaluate the impact of the local culture-based website application on students' reading comprehension, a comparative analysis was conducted using pre-test and post-test scores. Both tests consisted of 60 multiple-choice questions, each designed to assess comprehension of the reading texts. The distribution of pre-test scores was skewed towards the lower end, with most students scoring between 40 and 60. In contrast, the post-test scores were more evenly distributed, with a significant shift towards higher scores, particularly in the range of 70 to 85.

Based on Table 2., it indicates that the pre-test results revealed that the average score of students was 55.6 out of 100, indicating a moderate level of reading comprehension before the intervention. The standard deviation was 12.8, which suggests a considerable variation in scores, reflecting a wide range of reading abilities among the students prior to the implementation of the local culture-based website application. On the other hand, the post-test results showed a significant improvement in reading comprehension, with the average score rising to 73.4 after the treatment sessions. The standard deviation decreased to 9.5, indicating that the intervention effectively reduced the performance gap among students.

Furthermore, a paired sample t-test was conducted to compare the pre-test and post-test scores, revealing a statistically significant increase in reading comprehension ($t(114) = 12.67$, $p < 0.001$). This finding suggests that the intervention had a positive impact on students' reading performance. To further assess the magnitude of this impact, Cohen's d was calculated, resulting in a value of 1.62. This large effect size demonstrates that the local culture-based website application substantially improved students' reading comprehension skills.

Table 2. Result of Students' Reading Performance

Statistic	Pre-test	Post-Test
Mean Score	55.6	73.4
Standard Deviation	12.8	9.5
t-value	N/A	12.67
p-value	N/A	<0.001
Cohen's d	N/A	1.62

The findings reveals that the intervention using a local culture-based website application significantly improved the reading comprehension of ninth-grade students. The increase in mean scores, the decrease in score variation, and the large effect size all point to the effectiveness of the culturally relevant content and the structured learning activities provided through the website application. These findings suggest that incorporating local culture into English reading instruction can be a powerful tool for enhancing students' academic performance.

3. Students' attitude towards the use of the local culture-based application in learning

The students' attitudes towards the use of the local culture-based application in their learning process were assessed using an online questionnaire. The questionnaire, consisting of 20 questions, was divided into three subsections: affective, behavioural, and cognitive. Each question was designed to capture different aspects of the students' attitudes toward the application.

The questionnaire was administered through Google Forms, and students completed it using their mobile phones. The results were analyzed to determine the overall student response to the application in terms of their feelings (affective), actions (behavioural), and thoughts (cognitive) regarding its use in learning.

The questionnaire used a Likert scale to gauge students' attitudes toward the use of the local culture-based application in learning. The scale ranged from "strongly agree" (5 points) to "strongly disagree" (1 point). The responses were analyzed by calculating the mean score for each of the three subsections: affective, behavioral, and cognitive. These mean scores were then compared to a predefined scale to determine the overall level of students' attitudes.

Based on Table 3, it was shown that the overall attitude of the students towards the local culture-based application was positive, with most mean scores falling within the "positive attitude" and "strongly positive attitude" ranges. This suggests that the integration of local cultural content into the learning process via the application was well-received by the students and effectively enhanced their learning experience.

Table 3. The Result of Students' Attitude Level

Attitude Subsection	Mean Score	Attitude Level
Affective	82	Positive
Behavior	88	Strongly positive
Cognitive	79	Positive
Overall	83	Positive

The affective subsection focused on the students' emotional responses to using the application, such as enjoyment, interest, and motivation. The mean score of 82 indicates that students had a **positive affective attitude** towards the application. They generally enjoyed using the application and felt more motivated and interested in the learning activities. On the other hand, the behavioral attitude subsection evaluated how the application influenced the students' actions, including their participation, engagement, and effort in learning activities. With a mean score of 88, students exhibited a **strongly positive behavioral attitude**. They were more actively engaged and put more effort into their reading tasks when using the application. The majority of students reported that the application encouraged them to be more actively involved in their reading assignments and to put more effort into understanding the material. Additionally, the cognitive attitude assessed the students' perceptions of the application's effectiveness in enhancing their understanding and comprehension of the reading materials. The mean score of 79 suggests a **positive cognitive attitude**. Students believed that the application helped them understand the reading materials better and improved their comprehension skills. The results showed that students believed the application was beneficial in helping them grasp the content more easily and improve their overall reading skills.

The analysis shows that the students responded positively to the local culture-based application in all three aspects—affective, behavioral, and cognitive. The application not only made the learning process more enjoyable but also effectively engaged students and

improved their comprehension of the reading materials. This positive feedback reinforces the value of culturally relevant content in educational tools.

Discussion

1. Students' Activities During the Learning Process

The analysis of students' activities during the learning process provides valuable insights into how the local culture-based application influenced their engagement and interaction with the reading materials. The study involved five meetings, with the first being a pre-test, followed by three treatment sessions using the application, and concluding with a post-test and a questionnaire on students' perceptions. The involvement of one English teacher as a collaborator further ensured that the instructional strategies were aligned with the classroom context.

The first point is engagement during treatment sessions. The treatment sessions, which focused on improving reading comprehension, vocabulary understanding, and grammar identification through culturally relevant texts, revealed a noticeable increase in student engagement. The use of local cultural content appeared to resonate with the students, as they were more actively involved in discussions and activities compared to their usual reading lessons. This heightened engagement can be attributed to the cultural relevance of the materials, which made the learning experience more relatable and interesting for the students.

This finding is consistent with Tolibayev & Menlimuratova (2023), who demonstrated that immersion in the target language's culture might increase motivation for learners. The study emphasized that culturally relevant materials help bridge the gap between students' lived experiences and academic content, making learning more meaningful and engaging.

Moreover, Li & Wang (2024) stated that Cultural self-confidence reflects a country's or nation's spiritual outlook, as well as its identification with its own culture, and in the context of foreign language courses, can help students strengthen their cultural self-confidence, increase their sense of identification, and pride in the local culture.

The second point is collaboration and interaction. The presence of the English teacher as a collaborator was crucial in facilitating effective learning sessions. The teacher's role in guiding the activities and providing feedback ensured that the students stayed on track and fully understood the materials presented through the application. This collaborative approach between the researcher and the teacher helped create a supportive learning environment where students felt comfortable exploring the content and expressing their thoughts.

Research by Darsih et al. (2023) highlights the importance of teacher involvement in the implementation of new educational tools. Their study found that the use of technology in English education has helped teachers not only prepare for class, but also make their e-classes more student-centered and engage students in topic learning.

The third point is improvement in comprehension and critical thinking. Throughout the treatment sessions, students showed a gradual improvement in their comprehension skills, particularly in understanding complex vocabulary and identifying grammatical structures within the texts. The local culture-based application seemed to facilitate a deeper connection with the content, enabling students to apply their prior knowledge and cultural understanding to decode and interpret the reading materials more effectively.

This aligns with the findings of Rahman & Fitria (2023), who observed that students exposed to culturally relevant texts demonstrated better critical thinking and

comprehension skills compared to those who were taught using standard, culturally neutral materials. The cultural context provided by the application allowed students to draw parallels between the text and their own experiences, thereby enhancing their ability to analyze and understand the material.

Furthermore, Park et al. (2024) found that students' comprehension and critical thinking skills improved significantly when the learning content was rooted in familiar cultural contexts. This suggests that culturally relevant materials not only boost engagement but also support cognitive processes that are essential for academic success.

The fourth is reduced performance gaps. One of the key outcomes observed during the learning process was the reduction in performance gaps among students. The standard deviation in the post-test results was lower than in the pre-test, indicating that the application helped to level the playing field, allowing students of varying abilities to achieve a more uniform level of comprehension.

This finding resonates with Tosida, Ardiansyah, Waluyo (2020) who reported that culturally responsive teaching strategies can help reduce disparities in student performance. Developing instructional gaming media with a local context helps enhance students' understanding of their surroundings.

In this study, the local culture-based application served as an equalizing tool, providing all students with a common cultural framework through which they could approach the reading tasks. This approach not only facilitated better comprehension but also helped lower-achieving students catch up with their peers.

2. Students' Reading Performance

The pre-test and post-test results demonstrate a substantial improvement in students' reading comprehension. The mean score increased from 55.6 in the pre-test to 73.4 in the post-test, with a statistically significant t-value of 12.67 ($p < 0.001$). The decrease in standard deviation from 12.8 to 9.5 suggests that the intervention not only improved overall comprehension but also helped to reduce the performance gap among students. The effect size, calculated as Cohen's d = 1.62, further confirms the substantial impact of the local culture-based website application.

This improvement is consistent with previous research that emphasizes the importance of culturally relevant pedagogy in language learning. A study by Pathomchaiwat & Thongrin (2024) found that using locally and globally setting reading can be highly beneficial for the sociocultural background of EFL students, as they can use their real-world context to help them learn and grasp English texts effectively. Furthermore, in their study on Cultural Context as a Basis for Developing Reading Game Applications, Rustan and Rachmat discovered that playing the game product improved reading abilities (Rustan and Rachmat, 2024).

3. Students' attitude towards the use of the local culture-based application in learning

The attitude survey revealed that students responded positively to the application across all three subsections: affective, behavioral, and cognitive. The mean scores in these areas—82 for affective, 88 for behavioral, and 79 for cognitive—indicate that students not only enjoyed using the application but also found it beneficial for their learning. The strong positive behavioral attitude (mean score of 88) suggests that the application motivated students to engage more deeply with the reading materials.

This finding aligns with Hossain (Hossain, 2024), who reported that the integration of culture into English language learning is essential for developing not only linguistic proficiency but also a deep understanding and appreciation of the cultural contexts in

which the language is used. This holistic approach empowers learners to become more effective communicators, fosters greater respect for cultural diversity, and equips them with the skills needed to navigate and thrive in increasingly multicultural and interconnected global environments.

CONCLUSION

Fundamental Finding: This study highlights the significant impact of integrating local culture-based digital applications into English language instruction for ninth-grade students. In conclusion, the findings from the analysis of students' activities during the learning process provide compelling evidence of the benefits of using a local culture-based application in English language education. The application significantly enhanced student engagement, improved comprehension skills, and reduced performance disparities, all of which are crucial for academic success. These results underscore the importance of culturally responsive pedagogy and suggest that the integration of local cultural content into educational tools can lead to more effective and inclusive learning experiences. Future research should continue to explore the long-term impacts of such interventions and their applicability across different cultural and educational contexts.

Furthermore, the findings underscore the importance of culturally responsive pedagogy and suggest that integrating local culture into educational technology can be a powerful tool for enhancing student engagement and learning outcomes. As education continues to evolve, particularly with the increasing integration of technology, it is crucial to ensure that these advancements are culturally inclusive and responsive to the needs of all students.

Therefore, the findings demonstrate that such culturally relevant tools can markedly improve reading comprehension skills, enhance student engagement, and reduce performance disparities among students. The positive attitudes expressed by students towards the use of the application further underscore its potential as an effective educational resource. These results suggest that incorporating local cultural content into teaching materials not only enriches the learning experience but also supports more equitable and inclusive educational outcomes. This approach holds promise for broader implementation in diverse educational contexts, offering a valuable strategy for improving student achievement and motivation.

While this study provides valuable insights, it also opens avenues for future research. Given the positive outcomes observed, further studies could explore the long-term effects of using culturally relevant digital tools on students' language proficiency. Additionally, research could investigate how such tools can be adapted for use in other subjects beyond language learning. It would also be beneficial to examine the impact of these tools in different cultural contexts to determine their generalizability.

Implication: The results of this study have both theoretical and practical implications. Theoretically, the findings support the framework of culturally responsive teaching, which posits that that students learn best when the content is relevant to their cultural context. The significant improvements observed in students' activities and performance during the learning process suggest that culturally relevant content can serve as a powerful motivator and cognitive enhancer in the classroom. Additionally, integrating students' cultural backgrounds into the curriculum can enhance their academic performance. This study adds to the growing body of literature that advocates for the inclusion of local culture in language education as a means to improve comprehension and engagement.

This finding supports the work of Hossain (2024), who argued that the integration of culture, technology, and diverse learner backgrounds into language teaching creates a dynamic and relevant learning environment. By diversifying course materials, embracing digital tools, and recognizing the unique experiences of each learner, educators can foster meaningful language acquisition that prepares students to communicate effectively in a globalized world. This holistic approach ensures that language education not only imparts linguistic skills but also equips learners to navigate and contribute to an ever-evolving, interconnected global society.

Furthermore, the findings from this study underscore the practical benefits of integrating local cultural content into educational tools. The positive response from students and the observed improvements in engagement and comprehension suggest that such applications can be a valuable addition to the classroom, particularly in multicultural and diverse settings.

As highlighted by Wang et al. (2024), the integration of culturally relevant digital tools in education can lead to more equitable learning outcomes and greater student satisfaction. This study contributes to this body of research by demonstrating the effectiveness of a local culture-based application in enhancing student learning in a secondary school context.

Educators and policymakers should consider the adoption of culturally responsive educational technologies as a means to improve student engagement, reduce performance gaps, and support the development of critical comprehension skills. The success of the application in this study provides a model for how such tools can be effectively implemented in the classroom.

Moreover, the success of the local culture-based application suggests that educators should consider adopting similar tools in their classrooms. The positive response from students indicates that such applications can be an effective way to make learning more relevant and engaging, particularly in contexts where students may struggle with standard, culturally neutral materials. This approach can also help to bridge the gap between students of varying abilities, as evidenced by the reduced standard deviation in post-test scores.

Besides, the findings of this study have broader implications for educational policy and practice. The positive impact of culturally relevant content on students' learning outcomes highlights the need for educational materials and resources that reflect the diverse cultural backgrounds of students. As Garcia & Lin (2023) argue, a one-size-fits-all approach to education often overlooks the unique needs of students from different cultural backgrounds. This study provides empirical support for the argument that culturally responsive education is not only a matter of equity but also of effectiveness.

Likewise, the successful use of a digital application in this study underscores the potential of technology in enhancing culturally responsive teaching. As digital tools become increasingly integrated into the classroom, there is an opportunity to develop and deploy applications that cater to the cultural contexts of diverse student populations. This approach is supported by Wang et al. (2024), who found that educational technology that incorporates local cultural content can significantly improve learning outcomes in multicultural classrooms.

Limitation: Therefore, the findings demonstrate that such culturally relevant tools can markedly improve reading comprehension skills, enhance student engagement, and reduce performance disparities among students. The positive attitudes expressed by students towards the use of the application further underscore its potential as an effective educational resource. These results suggest that incorporating local cultural content into teaching materials not only enriches the learning experience but also supports more

equitable and inclusive educational outcomes. This approach holds promise for broader implementation in diverse educational contexts, offering a valuable strategy for improving student achievement and motivation.

Future Research: While this study provides valuable insights, it also opens avenues for future research. Given the positive outcomes observed, further studies could explore the long-term effects of using culturally relevant digital tools on students' language proficiency. Additionally, research could investigate how such tools can be adapted for use in other subjects beyond language learning. It would also be beneficial to examine the impact of these tools in different cultural contexts to determine their generalizability.

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