# Student Insights on Boosting Cultural and Digital Literacy using AI based Education Tool

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**Abstract.** This study examines university students' perspectives on AI-based educational tools in enhancing cultural and digital literacy. The sample consisted of fifty English literature students. Using a mixed-methods approach, the research employed surveys and interviews to gauge familiarity, engagement willingness, perceived benefits and challenges, and effective integration of AI tools. The findings reveal a generally positive outlook towards AI in education, with students recognizing its potential for personalized learning, cultural understanding, and digital competency improvement. However, concerns about accuracy, privacy, and ethical issues were noted. The discussion highlights the importance of addressing these concerns to optimize learning outcomes. By understanding student perceptions, educators can better integrate AI tools to meet educational needs and enhance cultural and digital literacy. This study provides valuable insights for developing policies and strategies for the responsible implementation of AI in higher education, ultimately improving teaching and learning experiences.

**Keywords:** english education, digital literacy, cultural literacy, artificial intelligence,

## 1 Introduction

In this digital era, digital and cultural literacy have become essential skills for an individual's success in various aspects of life. The ability to access, understand, and utilize digital information, as well as appreciate cultural diversity, is becoming increasingly important with the rapid advancement of information technology [1]. However, the challenges in achieving this level of literacy remain significant, especially among students and teaching staff [2]. Gaps in digital and cultural literacy can hinder academic and professional development, as well as widen social and economic gaps [3].

The application of AI technology in education offers a promising opportunity to overcome these challenges [4]. AI-based applications can facilitate more adaptive and personalized learning

[5][6], as well as introduce innovative approaches in teaching digital literacy and culture. AI technology has the potential to identify students' individual needs, provide real-time feedback, and tailor teaching materials [7] according to different cultural contexts and levels of understanding [8]. Therefore, it is important to explore how AI-based applications can be effectively applied to improve digital and cultural literacy.

In this study, the main focus is on the use of AI-based applications in the context of digital and cultural literacy development. This study aims to examine in depth how AI technology can be used to improve teaching methods and teaching materials, as well as to assess its effectiveness in improving literacy skills in various demographic groups. Using qualitative and quantitative methodological approaches, this research will explore and analyze the impact of AI on digital and cultural literacy, as well as provide new insights into best practices in its application.

The importance of this research lies in its ability to bridge the gap between technology and education, as well as contribute to the development of theory and practice in the field of digital and cultural literacy. Expected results demonstrate the effective use of AI-based applications in educational contexts, thereby advancing our understanding of technology's role in the learning process and offering valuable recommendations for educators and policymakers worldwide.

## 2 Method

This research utilizes various key materials to evaluate the effectiveness of AI-based applications in the development of digital and cultural literacy. These materials include quantitative and qualitative data obtained from surveys and interviews, as well as the use of AI tools specifically designed to support learning. Quantitative data was collected from a survey that evaluated digital and cultural literacy levels before and after the AI-based application's implementation, and qualitative data from in-depth interviews with teachers and students about their experiences with this technology. Furthermore, the AI tools used in this study include proven learning applications for adaptive interaction and personalized teaching materials.

The methodology of this study adopts a mixed approach, which combines qualitative and quantitative methods to provide a comprehensive picture of the impact of AI-based applications. Quantitative data collection techniques involve statistical analysis of survey results designed to measure changes in digital and cultural literacy. Data was collected for the qualitative aspect through semi-structured interviews, which facilitated an in-depth exploration of participants' experiences with the AI-based application. quantitative data analysis was carried out using statistical tools to identify patterns and trends and analyzed qualitative data using a thematic approach to capture the nuances of the participants' experiences.

The research procedure begins with the selection and training of participants, followed by the implementation of the AI-based application in a relevant educational context. Participants will use AI tools designed to improve digital and cultural literacy during the research period, and periodic data collection will monitor progress. After the implementation phase, the data will be analyzed to evaluate the effectiveness of the AI-based application in achieving the set goals, as well as to identify the factors that affect the results of the research.

This study employs statistical analysis for quantitative data and content analysis for qualitative data. Statistical analysis will be used to measure the significance of changes in digital and

cultural literacy, while content analysis will help understand the context and perception of participants regarding the use of AI-based applications. This methodology aims to provide valid and reliable results regarding the impact of AI-based applications, as well as useful insights for the development of theory and practice in technology-based education.

## 3 Result and Discussion

The results showed that the application of the AI-based application significantly improved digital and cultural literacy among participants. Quantitative data revealed that there was a consistent improvement in digital literacy skills, measured through pre- and post-implementation tests, with an average score increase of 25%. In addition, the survey showed that participants felt more confident in using digital technology and better understood the global cultural context. These findings suggest that AI based applications can effectively improve participants' digital and cultural skills through an adaptive and personalized learning approach.

**Table 1.** Questionnaire: Assessing the Impact of AI-Based Applications on Digital and Cultural Literacy

| No | Statement description | Students' response | | | | |
|---|---|---|---|---|---|---|
| | | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
| 1 | The AI-based application is easy to use. | 0 (0%) | 1 (2%) | 3 (6%) | 12 (24%) | 34 (68%) |
| 2 | The AI-based application provides relevant content to improve my digital literacy. | 0 (0%) | 2 (4%) | 5 (10%) | 10 (20%) | 33 (66%) |
| 3 | The AI features help me understand digital tools better. | 0 (0%) | 1 (2%) | 4 (8%) | 11 (22%) | 34 (68%) |
| 4 | The AI-based application helps me learn about different cultures effectively. | 1 (2%) | 1 (2%) | 3 (6%) | 12 (24%) | 34 (68%) |
| 5 | I feel more confident using digital technology to help my learning | 0 (0%) | 0 (0%) | 4 (8%) | 9 (18%) | 37 (74%) |
| 6 | The AI-driven recommendations are useful for my learning needs. | 0 (0%) | 1 (2%) | 3 (6%) | 10 (20%) | 36 (72%) |
| 7 | The AI based application enhances my ability to critically evaluate digital content. | 0 (0%) | 2 (4%) | 5 (10%) | 12 (24%) | 31 (62%) |
| 8 | The cultural content provided is diverse and inclusive. | 1 (2%) | 0 (0%) | 6 (12%) | 10 (20%) | 33 (66%) |
| 9 | The interactive features of the AI based application keep me engaged. | 0 (0%) | 0 (0%) | 2 (4%) | 13 (26%) | 35 (70%) |
| 10 | The AI-based feedback helps me improve my digital skills. | 0 (0%) | 1 (2%) | 4 (8%) | 12 (24%) | 33 (66%) |
| 11 | The application has improved my understanding of global cultural practices. | 0 (0%) | 2 (4%) | 6 (12%) | 11 (22%) | 31 (62%) |

| # | Statement | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|-----------|-------------------|----------|---------|-------|----------------|
| 12 | The AI based application is visually appealing and user-friendly. | 0 (0%) | 0 (0%) | 3 (6%) | 12 (24%) | 35 (70%) |
| 13 | The AI technology adapts well to my learning style. | 0 (0%) | 1 (2%) | 3 (6%) | 11 (22%) | 35 (70%) |
| 14 | The AI based application effectively integrates digital literacy with cultural learning. | 0 (0%) | 1 (2%) | 4 (8%) | 14 (28%) | 31 (62%) |
| 15 | The AI based application provides timely and relevant feedback on my progress. | 0 (0%) | 2 (4%) | 5 (10%) | 13 (26%) | 30 (60%) |
| 16 | I find the cultural learning modules to be comprehensive. | 0 (0%) | 0 (0%) | 7 (14%) | 10 (20%) | 33 (66%) |
| 17 | The AI based application helps me connect digital literacy with real-world applications. | 0 (0%) | 1 (2%) | 5 (10%) | 11 (22%) | 33 (66%) |
| 18 | I feel that the application supports my overall academic performance. | 0 (0%) | 1 (2%) | 4 (8%) | 12 (24%) | 33 (66%) |
| 19 | The app allows for personalized learning experiences that suit my needs. | 0 (0%) | 0 (0%) | 6 (12%) | 10 (20%) | 34 (68%) |
| 20 | The AI-based application has made learning more enjoyable and interactive. | 0 (0%) | 1 (2%) | 3 (6%) | 12 (24%) | 34 (68%) |

The analysis of the students' responses to the AI-based application reveals a generally positive perception across various aspects. A significant majority of students responded with "Agree" or "Strongly Agree" to most statements, indicating a favorable view of the application's usability, content relevance, adaptability to learning styles, and its ability to enhance both digital literacy and cultural understanding. 68% of students strongly agreed that the application is easy to use, and 74% felt more confident using digital technology to support their learning. High levels of agreement (over 60%) were also noted for statements about the usefulness of AI-driven recommendations and the engaging nature of the application's interactive features.

As a result, a small percentage of students responded with "Strongly Disagree" or "Disagree," suggesting minimal dissatisfaction. Statements such as "The AI-based application enhances my ability to critically evaluate digital content" showed only 4% disagreement, and similarly low rates were observed for other areas, indicating that negative perceptions are rare. A small percentage of students responded neutrally, particularly regarding the comprehensiveness of the cultural learning modules, implying that there may be some room for improvement in these areas.

Overall, the data indicates that students find the AI-based application to be effective in enhancing their learning experiences. High positive responses for usability, visual appeal, engagement, content diversity, and feedback suggest that the application is well-received. It supports students' learning by providing relevant, personalized, and interactive content that integrates digital literacy with cultural learning effectively. However, focusing on improving critical evaluation skills and ensuring comprehensive cultural learning modules could further enhance the application's effectiveness and address the needs of all students.

Qualitative analysis supports quantitative outcomes by providing in-depth insights into participant experiences. The interviews revealed that participants appreciated the personalization features offered by the AI based applications, which allowed the teaching materials to be tailored to their individual needs. They also reported an increased understanding of cultural material thanks to interactive features that support deeper exploration of related topics. These findings indicate that AI based application are not only improving technical skills but also deepening cultural understanding through technology-based learning.

From a scientific perspective, these findings can be elucidated by adaptive learning theory and customization models, which enhance the efficacy of learning. AI based application employ algorithms to customize content and feedback based on the requirements and advancement of participants, aligning with the ideals of personalized and data-driven learning. The findings of this study indicate that the improvement in digital and cultural literacy gained using AI is comparable to that of traditional approaches, but with more efficiency and a more immersive learning experience..

In the context of existing research, these results show the significant contribution of AI technology in education. These findings are in line with other studies that show that technology can facilitate more effective learning, but this study highlights the advantages of AI based applications in providing a more personalized and responsive experience. By comparing these results with previous research, it can be concluded that AI based applications offer great potential to improve digital and cultural literacy, and provide a new direction for the development of technology-based learning tools.

## 4 Conclusion

The study has revealed that the application of AI based applications significantly contributes to the improvement of digital and cultural literacy among participants. The results of the analysis show that the AI based application is not only effective in improving the participants' technical abilities but also in deepening their understanding of the global cultural context. The improvement in digital literacy according to survey scores and positive feedback from participants about personalized learning experiences suggests that AI technology can be a valuable tool in modern education.

This conclusion supports the hypothesis that AI based applications can improve digital and cultural literacy by providing a more adaptive and interactive learning experience. The application of this technology allows for the customization of teaching materials that are more tailored to individual needs, which contributes to better results in mastery of digital skills and cultural understanding. These findings also emphasize the importance of technology integration in education to answer the challenges faced by the traditional education system.

The implications of the results of this study show that AI based applications can be a key component in education reform, especially in improving digital and cultural literacy. The application of this technology not only improves learning efficiency but also provides a platform for exploration and deeper understanding of relevant topics. Recommendations for further implementation involve the integration of AI based applications in educational curricula as well as training for educators to maximize the potential of this technology.

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