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CultureFun: An Interactive Web-Based Cultural Learning Platform Using a Human-Computer Interaction Approach

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Abstract. This study aimed to develop CultureFun, a user-centered web-based platform for cultural learning among younger generations. The study addressed the limitation of existing digital cultural learning media, which often rely on text-heavy content and provide limited interactivity. User-Centered Design and Design-Based Research were applied to guide needfinding, empathy-based analysis, iterative prototyping, and usability evaluation. Data were collected through semi-structured interviews and direct observation involving twelve participants aged 10–23 years. The final prototype was evaluated using the System Usability Scale. The results showed that CultureFun was perceived as easy to use and engaging, particularly because the platform presented short cultural content supported by images, quizzes, and mini-games. The platform achieved an average usability score of 72.08, indicating good and acceptable usability. This study concludes that integrating user-centered analysis, iterative prototyping, and gamified interaction can support the development of an effective and usable digital cultural learning platform. However, the findings were limited by the small sample size and the focus on usability rather than direct measurement of learning effectiveness. Future studies are recommended to involve more diverse participants and examine long-term cultural knowledge retention.

Keywords: Human-Computer Interaction, User-Centered Design, Design-Based Research, Cultural Learning, Usability Evaluation

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1. INTRODUCTION

Indonesia is known for its rich and diverse culture. The distinctiveness and depth of its customs and traditions reflect a cultural diversity that forms an important part of Indonesian identity [1]. A country's culture plays a significant role in defining its identity. A nation's originality, uniqueness, or qualities that set it apart from other nations are referred to as its national identity [2]. However, the younger generation's interest in learning about Indonesian culture tends to wane as digital technology advances and globalization spreads [3]. Because they are dominated by lengthy textual explanations and do not suit the interactive and visual preferences of today's digital-native users, traditional cultural learning resources are sometimes seen as less engaging.

Prior research on digital cultural platforms has mostly concentrated on cultural preservation and information delivery rather than user-centered interaction and usability assessment. For instance, a web-based platform for Pecel Madiun was created as a way to disseminate information and preserve the region's culinary legacy, but it placed more of an emphasis on material display than on interactive learning tools or usability evaluation [4]. Similarly, earlier research on web-based cultural encyclopedias and digital cultural libraries has increased access to cultural resources and offered a wide range of cultural material, but it has paid little attention to interface design, user engagement, and interactive learning opportunities [5]. Additionally, earlier studies showed that web-based interactive multimedia was practical and successful in improving the digital and cultural literacy of primary school students, indicating that interactive methods can facilitate more interesting cultural learning opportunities [6]. Web-based cultural introduction applications with tourism and cultural information have also been developed by other studies. However, these applications typically prioritized informational content over a structured Human-Computer Interaction (HCI) approach, iterative prototyping, and systematic usability evaluation [7].

According to recent research, interactive design can enhance educational websites' and digital platforms' usability, engagement, and user experience, especially for younger audiences [8], [9]. Iterative prototyping at low, medium, and high-fidelity levels is seen to be crucial in HCI and user experience research for improving interface design and guaranteeing that the finished product satisfies user requirements and expectations [10].

Furthermore, it has been noted that interactive components like mini-games, quizzes, and succinct visual content boost student motivation, lessen cognitive overload, and facilitate more interesting learning experiences [6], [11], [12]. These results suggest that successful digital cultural learning systems should incorporate user-centered design, visual clarity, and meaningful interactivity in addition to accurate cultural information.

Despite these advancements, studies that integrate cultural learning content, gamified interaction, iterative prototyping, user-centered interface design, and systematic usability evaluation into a single web-based platform remain limited. Most prior studies have focused either on cultural content delivery, cultural preservation, or general multimedia learning, without thoroughly examining how younger users interact with digital cultural learning systems from a Human-Computer Interaction (HCI) perspective. Therefore, the research gap lies in the limited design and evaluation of a web-based cultural learning platform specifically developed for younger users through a structured and user-centered HCI process.

To address this gap, this study developed CultureFun, an interactive web-based cultural learning platform, using User-Centered Design (UCD) and Design-Based Research (DBR). The main contribution of this study lies in integrating needfinding, empathy-based analysis, iterative low- to high-fidelity prototyping, gamified learning features, and usability evaluation into a single platform development process. Therefore, this study aimed to design, develop, and evaluate the usability of an interactive web-based platform for introducing Indonesian culture to younger generations. This study focused on usability and user engagement rather than on direct measurement of academic achievement or learning effectiveness.

2. METHODS

2.1 Research Approach

This study employed User-Centered Design (UCD) and Design-Based Research (DBR) as complementary approaches to develop and evaluate the CultureFun platform. UCD was applied because the main objective of the study was to design a cultural learning platform that matched the needs, characteristics, and expectations of younger users. Through UCD, user perspectives were incorporated from the earliest stages of

development, including need identification, feature determination, interface design, and usability evaluation [13], [14], [15]. DBR was used to support the iterative nature of the study, as the platform was refined through repeated cycles of design, feedback, revision, and evaluation [16], [17].

The linkage between the research objectives and the selected methods is as follows. First, the objective of identifying user needs and challenges in digital cultural learning was addressed through semi-structured interviews and direct observation during the needfinding stage. Second, the objective of translating user needs into a design solution was addressed through empathy mapping, user flow design, and iterative prototyping at low-, medium-, and high-fidelity levels. Third, the objective of evaluating the usability of the final platform was addressed through the System Usability Scale (SUS). In this way, each method was selected to correspond directly to a specific stage and objective of the study.

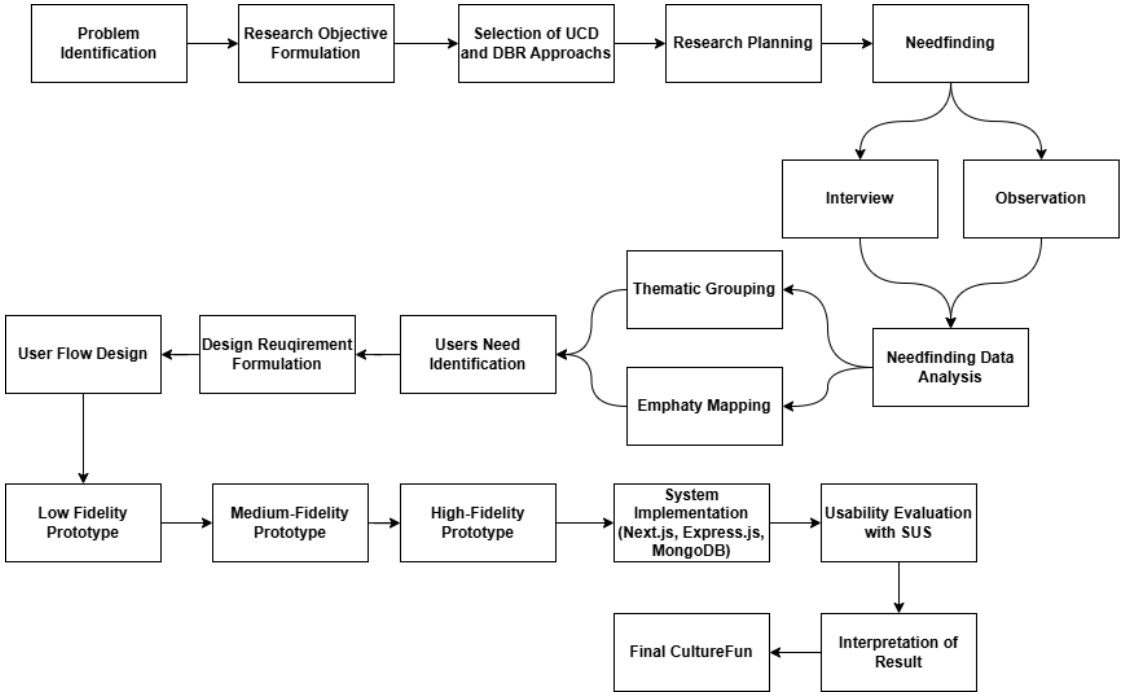

Figure 1. Research workflow of the CultureFun development process

SUS was chosen as the final usability evaluation instrument because it is simple, reliable, and widely used for assessing perceived usability in interactive systems, especially when the number of respondents is relatively limited [18]. Compared with more extensive

usability instruments, SUS was considered appropriate for this study because it enabled efficient measurement of usability aspects such as ease of use, consistency, complexity, learnability, and user confidence after participants interacted with the final prototype. Therefore, SUS provided a practical and standardized way to assess whether the final CultureFun prototype was acceptable from the users' perspective.

2.2 Research Stages

The research and development process of the CultureFun application consisted of five main stages: (1) research planning, (2) needfinding, (3) needfinding data analysis, (4) iterative prototype design, and (5) final usability evaluation. Figure 1 illustrates the overall research workflow, starting from problem identification and needfinding to iterative prototyping and final usability evaluation using SUS.

1) Research Plan

This study targeted younger learners, including school and university students, because they actively use digital media in their daily learning activities [19], [20]. The study first determined the main problem, which was that younger users did not find traditional digital cultural learning tools appealing enough. This problem led to the formulation of the study goal, which was to design, develop, and evaluate the usability of an interactive web-based cultural learning platform.

The research workflow began with needfinding through interviews and observations, followed by data analysis using empathy mapping to identify user needs, preferences, and challenges. The findings from this stage were then translated into user flow design and prototype development at low-, medium-, and high-fidelity levels. Finally, the high-fidelity prototype was evaluated using the System Usability Scale (SUS). This iterative process ensured that each design decision was grounded in user input and that the final design reflected user needs while providing an engaging learning experience [21], [22].

2) Needfinding

The needfinding stage was conducted to understand users' needs, behaviors, preferences, and difficulties in learning Indonesian culture through digital media. This stage represented the initial UCD process, in which user perspectives were explored before interface design and feature development were carried out.

a) Data Collection

Data were collected using semi-structured interviews and direct observation. Semi-structured interviews were selected because they enabled the researchers to explore participants' experiences and opinions in depth while maintaining consistency across the main question topics. Observations were conducted to identify users' engagement patterns, content preferences, and interaction tendencies when accessing digital learning materials. The combination of these two methods allowed the study to capture both verbal responses and observable user behavior.

b) Research Instruments

The interview questions were designed to identify users' experiences, preferences, and challenges in learning Indonesian culture through digital platforms. The instrument focused on prior experience, preferred learning media, difficulties in understanding cultural content, perceptions of interesting and uninteresting learning experiences, and expectations regarding interactive features. The main interview questions are presented in Table 1.

Table 1. Research Instrument

No	Statements
1	Have you ever learned Indonesian culture through websites or digital applications?
2	What types of learning media do you prefer (text, images, videos, or interactive content)?
3	What difficulties do you experience when learning cultural materials digitally?
4	What aspects make cultural learning interesting or boring for you?
5	Do interactive elements such as quizzes or mini-games help you learn better? Why?
6	What features would you expect from an ideal digital cultural learning application?

c) Participants

Twelve participants aged 10 to 23 years were involved in the needfinding stage through interviews and observations. They included elementary school students, junior high school students, senior high school students, and university students. The participants were selected purposively because they represented the younger generation as the target users of the CultureFun application and were familiar with digital technologies as

part of their learning activities. The interviews focused on participants' experiences with cultural websites or media, their preferences for digital learning formats, their difficulties in learning cultural content, and their interest in interactive elements such as quizzes and mini-games.

Participation was voluntary, and all participants were informed about the purpose of the study before data collection. For participants under 18 years old, parental consent was obtained prior to participation, and the participants also provided assent before the interview and observation activities were conducted. To protect privacy, participant identities were anonymized using initials in the reporting of findings.

Table 2. Participant List and Short Profiles

Initials	Occupation/Status	Reason for Selection
S.A	Student	Representative of young digital users
N.I	Student	Familiar with technology and able to provide feedback on the appearance, features, and user experience of the application.
D.M	High school student	Can help customize content, appearance, and habits in accessing information digitally.
A.A.F	Student	Have high technological literacy, accustomed to evaluating applications, and able to provide technical and constructive input regarding UI/UX and functional aspects of the application.
P.F	Student	Representing young users who actively use the internet to search for information.
N.M.A	Elementary school student	Seeing how elementary school-aged children understand culture through digital media.
K.A	Student	Representing young users who need engaging and visual cultural learning media.
M.H.H	Student	Representing people who want to learn about Indonesian culture.
A.D.K	Student	Accustomed to using websites to learn new things.
A.R.I	High school student	Representing high school students who learn about culture through school materials.

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Initials	Occupation/Status	Reason for Selection
S.F.A.I	Junior high school student	Representing early adolescent users who are more interested in learning through games and visuals.
R	High school student	Representing young users who are beginning to learn about culture through social media and school.

d) Needfinding Data Analysis

The qualitative data obtained from interviews and observations were analyzed through thematic grouping supported by empathy mapping. First, the researchers reviewed the interview and observation notes to identify recurring statements, behaviors, and concerns related to digital cultural learning. Second, similar responses were grouped into broader themes, such as preferred learning media, difficulties in understanding cultural content, prior experience with cultural websites, and expectations for interactive learning features. Third, these themes were interpreted using empathy mapping to organize what users said, thought, felt, and needed during the learning process.

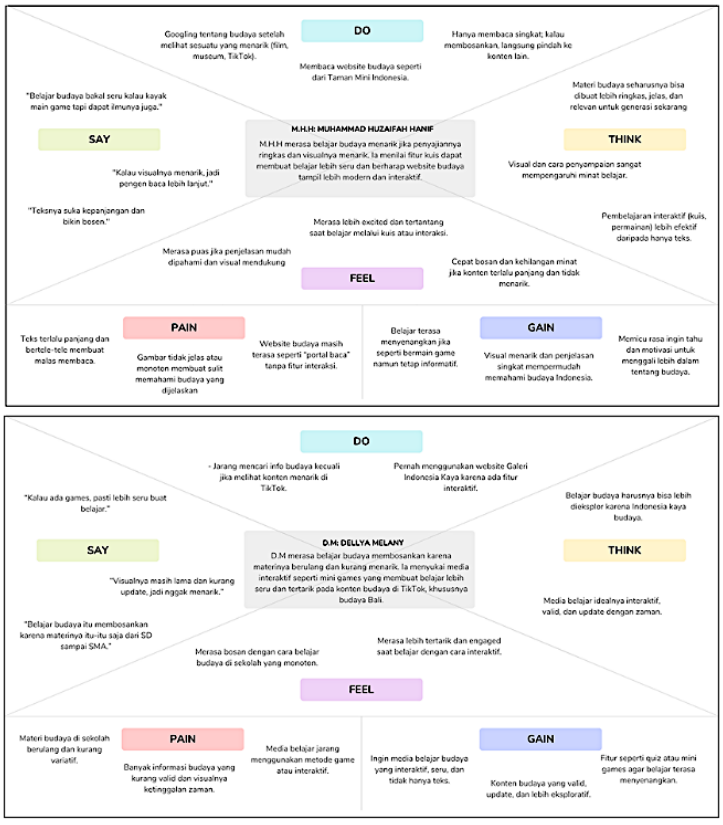

Figure 2. Empathy map of several sources

This analysis helped translate raw qualitative findings into actionable design requirements. For example, users' preference for shorter and more visual materials led to the decision to present concise cultural content accompanied by images, while their interest in interactive activities informed the inclusion of quizzes and mini-games. Thus, the analysis stage served not only to summarize user input but also to establish a clear rationale for subsequent design decisions, as shown in Figure 2.

e) Needfinding Results

Based on the needfinding results, most users perceived learning Indonesian culture as tedious because it was dominated by long textual content, formal language, and limited interactivity or visual elements. Users tended to be more engaged with learning materials that were concise, visually appealing, and interactive. These findings were used to define the main features of CultureFun, including brief visual content, category-based navigation, quizzes, and mini-games. Therefore, the needfinding stage served as the basis for defining the main features and design direction of the CultureFun application.

2.3 System Design

1) User Flow

A user flow visually maps the steps a user takes to achieve a goal within a digital product [23]. CultureFun's user flow guided users from the homepage through cultural category discovery, content access, and interactive activities such as mini-games and quizzes, ensuring intuitive navigation and an engaging learning experience as shown in Figure 3.

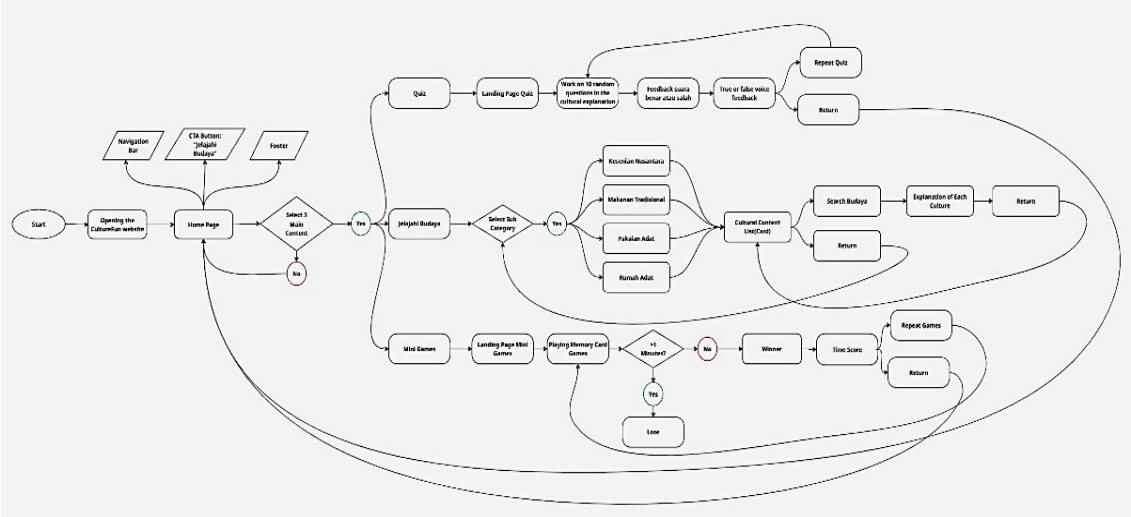

Figure 3. CultureFun User Flow

2) System Prototype

a) Low Fidelity Prototype

A low-fidelity prototype is an early sketch or wireframe used to illustrate interface layout and navigation [23], [24]. The CultureFun low-fidelity prototype depicted the homepage, cultural categories, content details, quizzes, and mini-games, focusing on a simple, clear user interaction flow for cultural learning as shown in Figure 4.

Figure 4. CultureFun Low Fidelity

b) Medium Fidelity Prototype

Compared to the previous wireframe, the medium-fidelity prototype created for CultureFun offered a more accurate depiction of the system's interactions and structure [24]. At this stage, the researchers refined layout consistency, feature grouping, and user flow clarity based on internal evaluation and the results of the needfinding analysis. For instance, content grouping was made more structured, navigation paths were simplified, and feature visibility was improved to reduce potential confusion during use. This stage functioned as an intermediate refinement process before the final visual implementation, as shown in Figure 5 [25].

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Figure 5. CultureFun Medium Fidelity

c) High Fidelity Prototype

The high-fidelity prototype of CultureFun represented the implementation stage in which the validated design was transformed into a functional web application [25]. With Next.js for the frontend, Express.js for the backend, and MongoDB for the database, the system was built to enable direct user interaction and usability testing in a real-world usage scenario.

Across the low-, medium-, and high-fidelity stages, the prototype development process was iterative. Revisions were made based on the findings from earlier stages, particularly users' preference for concise content, stronger visual support, and more engaging interactions. As a result, the final prototype emphasized simple navigation, image-supported cultural content, quizzes, and mini-games as the main design responses to identified user needs.

2.4 Usability Evaluation

The final high-fidelity prototype was evaluated by 12 respondents using the SUS. After testing the prototype, participants completed a 10-item SUS questionnaire using a five-point Likert scale ranging from Strongly Disagree to Strongly Agree. The questionnaire assessed several usability aspects, including ease of use, complexity, consistency,

learnability, and user confidence. SUS scores were calculated using the standard scoring procedure, in which odd-numbered items were scored by subtracting 1 from the response value and even-numbered items were scored by subtracting the response value from 5. The total score was then multiplied by 2.5 to obtain a final score ranging from 0 to 100. The average SUS score was used to determine the overall perceived usability of the CultureFun application.

3. RESULTS AND DISCUSSION

3.1 Characteristics of Respondents and Participants

1) Characteristics of Interview Participants

Based on Table 3, the gender distribution of interview participants involved in the needfinding stage of the *CultureFun* application showed a balanced distribution. Of the total 12 participants, 6 participants (50%) were male and 6 participants (50%) were female. This balanced distribution indicates that the needfinding process captured perspectives from both genders equally, allowing for a more comprehensive understanding of user needs.

Table 3. Gender of Participants

Gender	Frequency	Percentage
Male	6	50%
Female	6	50%
Total	**12**	**100%**

The age distribution of interviewees is displayed in Table 4. Most interview participants were older than 17 years (75%), while 17% were younger than 17 years and 8% were exactly 17 years old. This indicates that the majority of participants represented adolescents and young adults, which aligns with the intended target users of the CultureFun application.

Table 4. Age of Participants

Age	Frequency	Percentage
More Than 17	9	75%
17	1	8%
Less Than 17	2	17%
Total	**12**	**100%**

2) Characteristics of SUS Respondents

Table 5 indicate a balanced gender distribution among SUS respondents, with 50% male and 50% female participants.

Table 5. Gender of Respondents

Gender	Frequency	Percentage
Male	6	50%
Female	6	50%
Total	**12**	**100%**

According to Table 6, the majority of SUS respondents were aged 15–20 years, accounting for 50% of the total respondents. This was followed by respondents aged 21–25 years at 33%, while 17% were aged 25–30 years. These results indicate that most SUS respondents were adolescents and young adults, which is consistent with the main target users of the CultureFun application.

Table 6. Age of Respondents

Age	Frequency	Percentage
15-20	6	50%
21-25	4	33%
25-30	2	17%
Total	**12**	**100%**

3.2 Results of Needfinding (Interview Analysis)

Interviews with 12 participants revealed several important findings regarding digital cultural learning. Most participants perceived cultural learning as boring because it was dominated by long textual explanations and lacked visual and interactive elements. In addition, most participants were more familiar with general text-based information sources than with dedicated cultural learning websites. These findings indicate that younger users require cultural learning materials that are shorter, more visual, and more interactive. These needfinding results were directly translated into the design of CultureFun. The preference for shorter content informed the use of brief cultural explanations, while the need for visual support led to the inclusion of images in cultural content pages. Likewise, participants' interest in more engaging learning experiences

justified the inclusion of quizzes and mini-games. Therefore, the needfinding stage not only identified user problems but also functioned as the basis for the platform's feature selection and interface design decisions.

3.3 System Usability Scale (SUS) Results

The System Usability Scale (SUS) was used to assess the CultureFun application's usability. A five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5), was used to rate the ten items in the SUS questionnaire. Twelve respondents, ranging in age from fifteen to thirty, took part in the usability test. The SUS score for each respondent was determined by multiplying the overall score by 2.5 and converting the questionnaire replies in accordance with the usual SUS scoring guidelines. Table 7 displays the comprehensive computation results.

Table 7. System Usability Scale (SUS) Score Results

No	Respondent	Age (Years)	SUS Score
1	R1	15-20	52.5
2	R2	15-20	45
3	R3	21-25	50
4	R4	15-20	55
5	R5	21-25	85
6	R6	25-30	57.5
7	R7	21-25	52.5
8	R8	21-25	100
9	R9	25-30	100
10	R10	15-20	100
11	R11	15-20	70
12	R12	15-20	97.5
Average			**72.08**

According to the findings, the CultureFun application received an average SUS score of 72.08, indicating good and acceptable usability. This result suggests that the application was generally easy to use and well accepted by respondents, although some usability issues may still require improvement.

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Several respondents gave very high scores, indicating that they found the interface intuitive and easy to navigate, while others gave moderate scores, suggesting that some interface elements or interaction flows may still require refinement. This variation may be influenced by differences in users' digital familiarity, age, and expectations regarding interactivity. Overall, the findings indicate that CultureFun achieved acceptable usability, although further improvements are needed to make the experience more consistent and accessible across different user groups.

3.4 High-Fidelity Prototype Results (Web Interface)

The high-fidelity prototype of CultureFun presented the final web interface, emphasizing usability, visual clarity, and interactive learning through mini-games, quizzes, and concise content. As shown in Figure 6, the homepage used category-based buttons to simplify navigation and reduce the effort required for users to access cultural topics. This design reflected the needfinding results, which showed that younger users preferred concise and visually structured access to information.

Figure 6. CultureFun Home Page

Figure 7 shows that cultural content was presented through short descriptions supported by images. This interface was designed to reduce cognitive load and improve attention, particularly for younger users who expressed a preference for visual and concise learning materials during the needfinding stage.

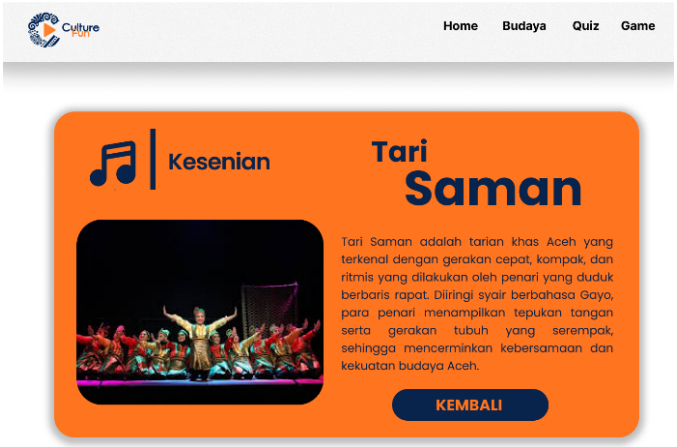

Figure 7. CultureFun Explore Culture

As shown in Figure 8, the quiz feature provided instructions, multiple-choice questions, and immediate feedback. This feature supported active participation and reinforced user engagement by transforming cultural learning from passive reading into interactive practice.

Figure 8. CultureFun Quiz Page

Figure 9 illustrates the mini-game feature, which combined cultural learning content with simple gameplay mechanics. This feature was important because it addressed participants' preference for more engaging and less monotonous learning experiences, as identified during the needfinding stage.

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Figure 9. CultureFun Games Page

3.5 Discussion

The results of this study indicate that the interactive and visual design of CultureFun supported positive user engagement and good perceived usability. Presenting cultural content through concise text, visual aids, quizzes, and mini-games appeared to make the platform more engaging for younger users. However, these findings should be interpreted as evidence of usability and perceived engagement rather than direct proof of improved learning effectiveness.

Although the average SUS score indicated good usability, the individual scores varied considerably across respondents. Several respondents gave very high scores, suggesting that they found the system intuitive and easy to use. However, some respondents gave moderate scores, which may indicate that certain interface elements or interaction flows were not equally clear for all users. This variation suggests that while the overall usability of CultureFun was positively perceived, further refinement may still be needed to improve consistency across different user groups.

The use of low-, medium-, and high-fidelity prototypes allowed iterative evaluation and refinement, ensuring that the final design met user expectations. These findings are consistent with previous studies showing that interactive and visually engaging interfaces can improve learner motivation, usability, and perceived engagement in digital learning environments [10]. In the context of cultural learning, the CultureFun platform extends these findings by combining concise visual content with gamified elements such as quizzes and mini-games within a user-centered design process.

These results suggest that, for cultural education applications, attention to UI/UX design, interactivity, and visual clarity is important for supporting engaging and usable learning

experiences. Furthermore, user feedback during the design process provided valuable insights that guided feature prioritization and interface improvements.

Despite these positive outcomes, this study has several limitations. Firstly, the sample size was relatively small (12 participants) and limited to students from elementary to university levels, which may not represent the broader population of learners interested in Indonesian culture. Secondly, participants were selected purposively, which may introduce selection bias. Future research could employ larger, more diverse samples and explore additional factors such as long-term learning outcomes, cultural knowledge retention, and comparative effectiveness of different gamification strategies. Overall, the study showed that interactive features, clear navigation, and visual support contributed to a more usable and engaging cultural learning platform..

4. CONCLUSION

This study concluded that the development of the CultureFun application using User-Centered Design (UCD) and Design-Based Research (DBR) successfully produced an interactive and user-friendly web-based cultural learning platform for younger users. The findings showed that the integration of concise content, visual elements, quizzes, and mini-games supported positive user engagement and good perceived usability, as reflected in the average System Usability Scale (SUS) score of 72.08. The main contribution of this study lies in the integration of needfinding, empathy-based analysis, iterative low- to high-fidelity prototyping, and usability evaluation within a single cultural learning platform development process. Practically, this study highlights the importance of UI/UX design, interactivity, and visual clarity in designing digital cultural learning media for younger generations. Theoretically, it supports the application of UCD and DBR as complementary approaches for developing educational technology that is responsive to user needs. However, this study was limited by the small sample size and by its focus on usability rather than direct measurement of learning effectiveness. Therefore, future studies are recommended to involve more diverse participants, examine long-term cultural knowledge retention, and explore the effectiveness of additional gamification or adaptive learning strategies.

REFERENCES

[1] H. N. Samongilailai and A. B. Utomo, "Strategi melestarikan budaya Indonesia di era modern," *WISSEN J. Ilmu Sos. Humaniora*, vol. 2, no. 4, pp. 157–168, Oct. 2024, doi: 10.62383/wissen.v2i4.376.

[2] N. Hermawan, D. A. Dewi, and M. I. Ardiansyah, "Budaya di era digital: Pengaruhnya terhadap masyarakat Indonesia," *MARAS J. Penelit. Multidisiplin*, vol. 2, no. 1, pp. 1–6, Jan. 2024, doi: 10.60126/maras.v2i1.110.

[3] P. V. Asteria and A. Nofitasari, "Wujud budaya Indonesia sebagai pemantik motivasi belajar Bahasa Indonesia sebagai bahasa asing," *Wacana J. Bahasa, Seni, Pengajaran*, vol. 7, no. 1, pp. 61–71, Jul. 2023, doi: 10.29407/jbsp.v7i1.19887.

[4] B. I. Rokhman and N. Haswanto, "Perancangan website kuliner pecel Madiun sebagai media pelestarian warisan budaya tak benda Indonesia," *MALCOM: Indones. J. Mach. Learn. Comput. Sci.*, vol. 4, no. 1, pp. 212–223, Jan. 2024, doi: 10.57152/malcom.v4i1.1055.

[5] K. E. Sari, A. M. Tsani, and D. R. Santi, "Optimizing the use of the library website www.budayaindonesia.org in cultural conservation efforts," *Proc. Int. Conf. Relig., Soc. Humanit.*, vol. 3, no. 4, pp. 197–202, 2024.

[6] D. M. Zulqadri and B. Nurgiyantoro, "Pengembangan multimedia interaktif berbasis web untuk meningkatkan literasi budaya dan literasi digital siswa kelas V SD/MI," *J. IPTEKKOM*, vol. 25, no. 1, pp. 103–120, Jun. 2023, doi: 10.17933/iptekkom.25.1.2023.103-120.

[7] N. Apriliyani, E. Setiawan, and A. Muchayan, "Implementasi metode agile dalam pengembangan aplikasi pengenalan budaya berbasis web," *J. Ilmu Komput. Bisnis*, vol. 13, no. 1, pp. 8–21, 2022.

[8] A. Maskur and A. Syarief, "Usability and user experience evaluation for website design of higher education institutions (2015–2024): Evolutionary trends and clusters of research," *J. Sist. Inf. Bisnis*, 2025, p. 3, doi: 10.1471/vol15iss3pp321-339.

[9] A. M. A. Nugroho and Suprihadi, "Optimalitas perancangan website: Pendekatan user centered design untuk pengalaman pengguna berbagai usia di situs Jalan Cantik," *J. JTIK (J. Teknol. Inf. Komun.)*, vol. 9, no. 1, pp. 304–313, Nov. 2024, doi: 10.35870/jtik.v9i1.3179.

[10] Q. Li, T. Luo, and J. Wang, "The role of digital interactive technology in cultural heritage learning: Evaluating a mid-air gesture-based interactive media of Ruihetu," *Comput. Animat. Virtual Worlds*, vol. 33, no. 3–4, Jun. 2022, doi: 10.1002/cav.2085.

[11] M. Sailer and L. Homner, "The gamification of learning: A meta-analysis," *Educ. Psychol. Rev.*, vol. 32, no. 1, pp. 77–112, Mar. 2020, doi: 10.1007/s10648-019-09498-w.

[12] N. Zeybek and E. Saygı, "Gamification in education: Why, where, when, and how?—A systematic review," *Games Cult.*, vol. 19, no. 2, pp. 237–264, Mar. 2024, doi: 10.1177/15554120231158625.

[13] A. A. Alatas and S. Kusumadewi, "Desain ulang website Lumiere menggunakan metode user centered design (UCD)," *J. Sains, Nalar, Apl. Teknol. Inf.*, vol. 4, no. 2, pp. 173–181, Jul. 2025, doi: 10.20885/snati.v4.i2.40640.

[14] L. Donaningruma, "Implementation of user-centered design method in the development of Tangkolo Village website based on user experience to improve mobile accessibility," *J. Appl. Inf. Syst. Informatics*, vol. 2, no. 2, pp. 62–67, 2024.

[15] A. Nurulhaifa and R. Hikmawan, "UI/UX design and evaluation: Web platform to support self-regulated learning with a user-centered design approach," *J. Paedagogy*, vol. 13, no. 1, pp. 88–98, Jan. 2026.

[16] A. Mirabdolah, M. Alaeifard, and A. Marandi, "User-centered design in HCI: Enhancing usability and interaction in complex systems," *Int. J. Adv. Hum.-Comput. Interact.*, vol. 1, no. 1, pp. 16–33, Dec. 2023.

[17] A. Bakker, *Design Research in Education*. Routledge, 2018, doi: 10.4324/9780203701010.

[18] J. R. Lewis, "Measuring perceived usability: The CSUQ, SUS, and UMUX," *Int. J. Hum.-Comput. Interact.*, vol. 34, no. 12, pp. 1148–1156, Dec. 2018, doi: 10.1080/10447318.2017.1418805.

[19] D. P. Priyanto, F. Annas, and M. H. Al Hafidz, "Pengembangan media pembelajaran budaya Minangkabau menggunakan Adobe Flash untuk meningkatkan minat dan antusiasme siswa," *J. Educ. Manag. Strategy*, vol. 3, no. 01, pp. 70–80, Jun. 2024, doi: 10.57255/jemast.v3i01.610.

[20] A. I. Wang and R. Tahir, "The effect of using Kahoot! for learning—A literature review," *Comput. Educ.*, vol. 149, pp. 1–22, May 2020.

[21] C. A. Liang, S. A. Munson, and J. A. Kientz, "Embracing four tensions in human-computer interaction research with marginalized people," *ACM Trans. Comput.-Hum. Interact.*, vol. 28, no. 2, pp. 1–47, Apr. 2021, doi: 10.1145/3443686.

[22] A. B. Kurniyawan and I. Irwansyah, "Redesign UI/UX dengan metode SUS dan UCD pada website akademik UHAMKA," *Media Teknol. Inf. Komput. J.*, vol. 9, no. 2, pp. 329–337, Aug. 2025.

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[23] M. Katsumata Shah, B. Jactat, T. Yasui, and M. Ismailov, "Low-fidelity prototyping with design thinking in higher education management in Japan: Impact on the utility and usability of a student exchange program brochure," *Educ. Sci.*, vol. 13, no. 1, Art. no. 53, Jan. 2023, doi: 10.3390/educsci13010053.

[24] A. H. Luthfi and I. Arfiani, "Perancangan UI/UX aplikasi Sampahocity menggunakan pendekatan UCD (User Centered Design)," *J. Ilmu Komput. Sist. Inf. (JIKOMSI)*, vol. 7, no. 1, pp. 24–36, Jan. 2024, doi: 10.55338/jikomsi.v7i1.2175.

[25] E. R. Subhiyakto and Y. P. Astuti, "UI/UX design prototype for enhancing user experience using user-centered method," *Sci. J. Informatics*, vol. 10, no. 4, 2023, doi: 10.15294/sji.v10i4.47528.