Gamification design in folklore: Turning text into adventure

Maudina Lutfiyani*, Isah Cahyani, Yulianeta Yulianeta, Khaerudin Kurniawan, Halimah Halimah

Universitas Pendidikan Indonesia, Bandung, Indonesia

Abstract

This study aims to design a gamification-based folk-tale learning model as an innovation in Indonesian language teaching materials, relevant to the demands of the 21st century and to the strengthening of local cultural literacy. The Research subjects were seventh-grade junior high school students, with the Research focus limited to the design stage within the framework of Thiagarajan's 4D development model (Define, Design, Develop, Disseminate). The design stage began with an analysis of learning needs, which showed that learning folk tales remained conventional, lacked interactivity, and did not integrate cultural values contextually. Based on the results of this analysis, the concept for the "Petualangan Jejak Nusantara" media was developed, an educational game that combines points, badges, and avatars to foster student engagement and motivation in learning. This design emphasises the integration of cognitive, affective, and cultural dimensions and presents narratives that describe local wisdom as a means of internalising moral values and cultural identity. The main contribution of this Research lies in the development of a conceptual design for gamification based on local culture, which can serve as a basis for further development and validation in the next stage. The results of this study are expected to provide a theoretical basis for the development of interactive and meaningful Indonesian language teaching materials grounded in cultural literacy.

Abstrak

Kata Kunci:

cerita rakyat; desain
bahan ajar;
gamifikasi; literasi
budaya; model 4D

Perancangan Gamifikasi dalam Cerita Rakyat: Mengubah Teks Menjadi Petualangan

Penelitian ini bertujuan merancang model pembelajaran teks cerita rakyat berbasis gamifikasi sebagai inovasi bahan ajar Bahasa Indonesia yang relevan dengan tuntutan abad ke-21 dan penguatan literasi budaya lokal. Subjek penelitian adalah siswa SMP kelas VII, dengan fokus penelitian dibatasi pada tahap perancangan (design stage) dalam kerangka model pengembangan 4D Thiagarajan (Define, Design, Develop, Disseminate). Tahap perancangan diawali dengan analisis kebutuhan pembelajaran, yang menunjukkan bahwa pembelajaran teks cerita rakyat masih bersifat konvensional, kurang interaktif, dan belum mengintegrasikan nilai-nilai budaya secara kontekstual. Berdasarkan hasil analisis tersebut, dirancanglah konsep media "Petualangan Jejak Nusantara", yaitu game edukatif yang memadukan elemen points, badges, dan avatar untuk menumbuhkan keterlibatan belajar dan motivasi siswa. Produk rancangan ini menekankan integrasi dimensi kognitif, afektif, dan kultural, serta menyajikan narasi yang menggambarkan kearifan lokal sebagai sarana internalisasi nilai moral dan identitas budaya. Kontribusi utama penelitian ini terletak pada pengembangan rancangan konseptual gamifikasi berbasis budaya lokal yang dapat menjadi dasar bagi pengembangan dan validasi pada tahap berikutnya. Hasil penelitian ini diharapkan memberikan landasan teoretis bagi inovasi bahan ajar Bahasa Indonesia berbasis literasi budaya yang interaktif dan bermakna.

* Corresponding author:
maudinalutfiyani@upi.edu

1   Introduction

The development of the digital era requires the world of education to present learning innovations that are not only oriented towards technological advancement, but also capable of maintaining the sustainability of local cultural values (Burbules et al., 2020). One of the challenges in education today is integrating learning technology with locally rooted wisdom-based materials, such as folklore, so that they remain relevant and meaningful to students in the digital age (Firmansyah et al., 2025; Apdelmi et al., 2025).

Folklore, as part of oral literature, conveys moral, social, and cultural values that shape students' character and cultural literacy (Abidin et al., 2023). However, the rise of digitalization and the dominance of social media have made folklore less familiar to younger generations (Flinterud, 2023). The lack of integration of folklore into teaching materials and the fading tradition of storytelling within families contribute to students' limited knowledge of the folk tales of their region (Hatima et al., 2025). This situation highlights the need for learning innovations that can revitalise folklore through approaches tailored to students as a digital generation.

The use of technology in learning requires teachers not only to provide access to digital learning resources but also to guide students in sorting through accurate and meaningful information, while instilling moral values and character. (Judijanto et al., 2025; Surahman et al., 2025;Yaqin, 2025). Therefore, folklore learning innovations need to be designed interactively so that students not only understand the story's content but also internalize the values of local wisdom it conveys.

One relevant approach to addressing these challenges is gamification. Gamification is a learning strategy that integrates game elements, such as challenges, competitions, points, and rewards, into non-game contexts to increase student motivation and engagement in learning. (Zourmpakis et al., 2023; Khaldi et al., 2023). In literature education, gamification can create an enjoyable, interactive learning experience while helping students understand the plot, characters, and moral values in folklore (Aprilianto et al., 2025).

Previous studies have shown that folklore has been developed in the form of game-based learning media, both in digital game formats and educational game modules. Zulkarnais and Prasetyawan (2018) developing Android-based educational games to introduce Lampung folklore and demonstrate that digital gaming media can increase user interest in folklore. Similar Research was conducted by Grady (2014) through the design of an educational game based on the Malin Kundang folk tale, aimed at children as a more interesting and enjoyable learning tool. Furthermore, Noven (2021) Developing the game "Roro Jonggrang" as a learning medium to introduce folk tales to students, and concluding that educational games are suitable for use as alternative learning media. Karamoy (2018) Designing an Android-based game application to introduce the folklore of Abo Mamongkuroit and Tulap the Giant, which is considered capable of supporting the preservation of folklore through the use of digital media.

However, most previous studies still focus on developing learning media and increasing students' interest or motivation to learn. Studies on the application of gamification elements as a learning strategy, such as tiered challenges, inter-student competitions, point acquisition systems, and leaderboards, have not been systematically discussed to encourage students' cognitive engagement and understanding of the moral values and local wisdom contained in folklore.

Based on the above description, there are still Research gaps in the design and implementation of gamification-based folklore learning that not only emphasise student engagement but also focus on understanding and internalising moral values and local culture. Therefore, this study aims to

design gamification-based folklore learning by integrating elements of challenges, competition, point acquisition, and leaderboards to create a fun, interactive, and meaningful learning atmosphere for students.

2 Methods

This study uses the Research and development (R&D) method with the 4D development model proposed by Thiagarajan, as adapted by Sugiyono (2016). The 4D model consists of four stages, namely Define, Design, Development, and Dissemination. However, in this study, development is limited to the Design stage.

Research restrictions at the design stage were imposed because the main objective of this study was to produce a prototype design for gamification-based learning media, rather than to test the effectiveness or impact of learning media implementation on student learning outcomes. Therefore, the 4D development model in this study is combined with a rapid prototyping framework, in which the Design stage focuses on the conceptual and visual design of learning media that serve as a basis for development Research in the next stage.

At the Design stage, Research activities include two main processes, namely Material collection and learning media design. (Sukaryanti et al., 2023). The collection of Material was carried out by identifying and reviewing relevant folklore texts, particularly Amat Mude folklore from Aceh, for analysis of storyline, characters, setting, and the moral values contained therein. The results of this analysis served as the basis for designing the game's storyline, challenge mechanisms, and gamification elements, aligned with the context of folklore learning.

The learning media was designed by developing a preliminary design for an educational game that included the game structure, challenge types, point system, and leaderboard concept. (Hasanah & Ermalianti, 2025). This design is conceptual and visual, and does not yet include the implementation, testing, or user validation stages. Thus, this study does not claim to have increased student motivation or understanding, but rather focuses on the conceptual feasibility of the design as a gamification-based medium for folklore learning.

Figure 1. The 4D Development Model
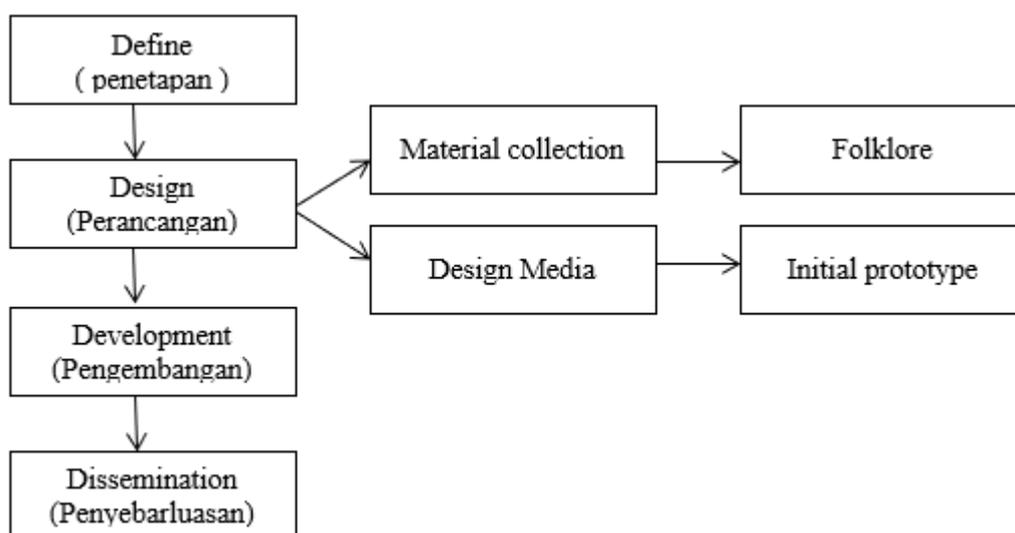
Regarding the research subject, this study did not directly involve students because it had not yet entered the product development and testing stage. The target users of the learning media designed in this study were seventh-grade junior high school students. The determination of the

target users was used as a reference in adjusting the characteristics of the material, cognitive level, and learning needs of seventh-grade students. The involvement of students as research subjects, pilot testing, and testing the effectiveness of learning media are planned to be carried out in further research. Thus, the results of this study are in the form of a preliminary design for a gamification-based folklore educational game that can be used as a basis for further research on the development, implementation, and evaluation of learning effectiveness.

3 Findings

The results of this study are presented based on the stages in the 4D development model (Define, Design, Development, Dissemination) proposed by Thiagarajan in Sugiyono (2016). However, in line with the objectives and limitations of the study, the results cover only the Define and Design stages. In development Research, the results at this early stage are methodologically valid findings because they serve as the basis for the design of learning products prior to the development and implementation stages (Jamilah & Amin, 2025).

3.1 Define Phase Results (Needs Analysis)

The Define stage aims to identify the initial learning conditions and user needs as the basis for learning product design (Nazlidou et al., 2024). Needs analysis is an important step in instructional design because it ensures that the product developed aligns with learners' characteristics and needs (Squalli Houssaini et al., 2024).

Data were collected by distributing a closed-ended questionnaire with Yes/No answer options to 32 students in one class. The questionnaire focused on students' interest in learning about folklore, their experience with digital media, and their preferences for game-based learning. This focus aligns with previous studies that emphasize understanding the characteristics of digital learners in the design of technology-based learning (Widodo et al., 2025).

Table 1. Results of Student Needs Analysis in Folklore Learning (Define Stage) (n = 32)

No.	Statement	Survey Responses			
		Yes	%	No	%
1	I am interested in studying regional folklore	13	40,6	19	59,4
2	The folklore education carried out so far is interesting	10	31,3	22	68,7
3	Teachers use digital media in folklore learning	8	25,0	24	75,0
4	I often play games on digital devices	25	78,1	7	21,9
5	I am more interested in learning using game-based media	26	81,3	6	18,7
6	Game-based media can help understand the Material	23	71,9	9	28,1
7	Folklore would be more engaging if packaged as a game	27	84,4	5	15,6

Based on Table 1, most students showed little interest in conventional folklore learning and limited use of digital media in learning. Traditional literature learning is often considered uninteresting when presented conventionally (Idham & Ismail, 2025). Conversely, the majority of students showed a high preference for digital game-based learning, supporting the finding that gamification can increase students' conceptual learning engagement (Hao & Tasir, 2024). The results of the needs analysis in the Define stage serve as the primary basis for designing learning products in the Design stage.

3.2   Design Phase Results (Product Design)

The Design stage in the 4D model aims to design learning solutions based on the results of the needs analysis in the Define stage. Based on these findings, this study developed a conceptual design for a gamified educational game on folklore, using the Amat Mude folk tale as the learning Material.

3.2.1 Folklore Educational Game Design

Figure 2. Gamification Start View

Figure 2 shows the initial display of the folklore educational game designed at the Design stage. This display serves as an orientation stage for learning, introducing students to the cultural context and folklore environment. The integration of local cultural elements in the visual design aims to strengthen students' cultural literacy, as recommended in local wisdom-based learning (Wahyudi et al., 2025).

Figure 3. Gamification Menu Display

Figure 3 shows the main menu, which serves as the learning navigation centre. This menu is designed to integrate learning outcomes, indicators, and game progress, ensuring that activities remain aligned with learning objectives (Annuar et al., 2025). This approach aligns with instructional design principles that emphasise integrating learning objectives, activities, and experiences (Sukmawati et al., 2025).
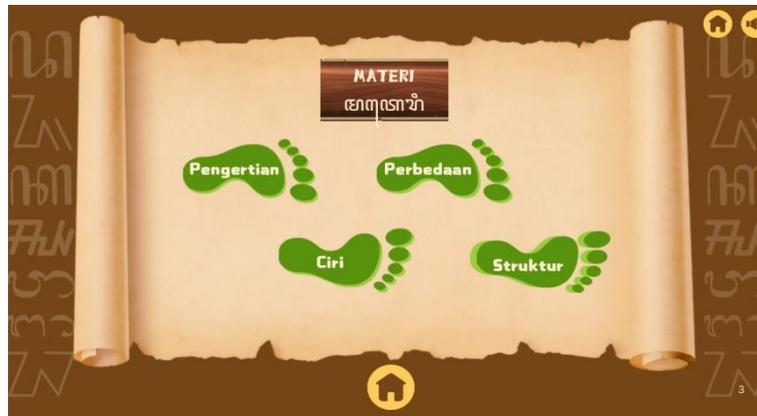
Figure 4. Basic Material Information

Figure 4 presents basic Material designed as a form of learning scaffolding. The presentation of Material before the game challenge aims to help students develop a conceptual understanding of folktales (Karmadi & Suhartini, 2024). This scaffolding strategy aligns with Research emphasising the importance of conceptual support in game-based learning (Gunanto, 2021).

Figure 5. Regional Folklore Selection Menu Display

Figure 5 displays an interactive map of Indonesia that links folklore with its region of origin. This geographically based presentation emphasises that folklore is a cultural product tied to the social and cultural context of the community that supports it, and that it supports contextual learning based on local culture (Wicaksana & Sudiatmi, 2021).

Figure 6 shows the interactive quiz feature designed as a formative assessment. This quiz provides conceptual feedback on students' understanding of the storyline and the moral values of folklore. The use of formative assessment in digital learning is recommended to support student learning reflection (Mohammadi Zenouzagh et al., 2025)

Figure 6. Tests in Gamification

Figure 7 shows the badge system, designed as a gamification element to provide symbolic feedback upon completing challenges. The use of badges as a motivational element is based on the concept of gamification, which emphasises the role of feedback and achievement in increasing learning engagement (Xiao & Hew, 2024; Luo, 2024).

Figure 7. Gamification Badge

3.3   The Relationship Between the Define and Design Stages

All design decisions in the Design stage were developed based on the results of the needs analysis in the Define stage. Students' low interest in conventional folklore and their strong preference for game-based media served as the primary basis for the design of gamified folklore educational games. This needs-based approach aligns with the principles of design and development Research, which emphasise the importance of empirical data as the basis for learning product design (Beliyawati et al., 2025).

3.4   Limitations of Research Results

In accordance with the 4D development model, the results of this study are limited to the Define and Design stages. This study does not cover the Development and Dissemination stages, so it does not report on the implementation, testing, or impact of media use on student motivation or learning outcomes. Therefore, claims of effectiveness are not presented in this study, and further development and empirical evaluation are recommended for future Research.

4   Discussion

This discussion focuses on interpreting Research findings in the Define and Design stages and their relevance to the Research objective: designing a gamified folklore education game that meets students' needs. In line with the characteristics of design and development Research, the discussion is not directed at testing effectiveness, but rather at the consistency between user requirement data and the resulting design decisions (Dinihari et al., 2025;Ghai & Tandon, 2023).

The results of the needs analysis in the Define stage (Table 1) show that most students have little interest in conventional folklore learning, as indicated by their low interest in the folklore learning that has been implemented so far and the minimal use of digital media by teachers. Traditional literature learning is often considered irrelevant and uninteresting to the digital generation when it is presented textually and teacher-centered. (Martin-Alguacil et al., 2024). In this context, folklore risks being marginalised in formal learning if it is not presented through an approach that is adaptable to technological developments and students' characteristics.

On the contrary, the data show that the majority of students have extensive experience playing digital games and have a strong preference for game-based learning. These findings are in line with the concept of digital natives proposed by Prensky (2001) in (Fernando & Premadasa, 2024), emphasising that today's students are more responsive to interactive, visual, and challenge-based learning environments. Game-based media can be a strong foundation for technology-based learning design, as long as it remains oriented towards learning objectives (Balakrishna, 2023; Dahalan et al., 2024).

Within this framework, the selection of gamification as a learning design approach at the Design stage has a strong empirical basis. Gamification is not understood as merely a game, but rather as a design strategy that integrates game elements such as challenges, feedback, and achievements into a non-game learning context to increase learning engagement (Triantafyllou et al., 2025). Thus, the design of the folklore educational game in this study is a direct response to the findings of the needs analysis, rather than a purely intuitive decision.

The prototype designs presented in Figures 2 to 7 serve as learning design artefacts, documenting how student needs are translated into gamification-based learning structures. In design and development Research, such artefacts are considered valid Research outcomes because they represent data- and theory-based design thinking processes (Subair, 2025). Therefore, the visualisation of prototypes in this study is not intended as a mere interface report, but rather as evidence of the relationship between needs analysis and design solutions.

The integration of local folklore, particularly the folk tales of Amat Mude, into game design also has significant pedagogical implications. Culture-based learning and local wisdom can strengthen students' cultural literacy, identity, and understanding of moral values when appropriately contextualised (Hatima, 2025). The use of interactive maps and folklore narratives in games supports contextual learning that links literary texts to their social and geographical settings, as recommended in culture-based education (Arifah, 2024).

In addition, the inclusion of interactive quizzes and a badge system in the game design reflects the application of formative assessment and symbolic motivation principles in digital learning. Research shows that immediate feedback and non-material reward systems can increase students' cognitive engagement, although they do not automatically guarantee improved learning outcomes without further empirical testing(Budiarti, 2025). Therefore, in this study, these features are positioned within the conceptual design, not as evidence of effectiveness.

Overall, the study's results were consistent with the Research objectives and data-driven. The needs analysis table served as the basis for design decisions, while the resulting prototype represented the conceptual implementation of the findings. The Development and Dissemination stages were recommended as a continuation of the study to test the validity, practicality, and effectiveness of the media empirically through limited and extensive trials.

5 Conclusion

This study aims to design gamification-based folklore learning media that suit the characteristics of digital era students while maintaining local cultural values. The study uses a Research and Development (R&D) approach with a 4D model, limited to the Define and Design stages. The analysis shows low student interest in conventional folklore learning and a strong preference for game-based learning. Based on these findings, an educational game media based on the Amat Mude folklore was designed, integrating elements of challenges, quizzes, badges, and cultural visuals. Theoretically, this study confirms that gamification is a pedagogical design strategy grounded in learning needs, local wisdom values, and the principles of scaffolding and formative assessment. Practically, this conceptual design can serve as a reference for teachers and learning developers in reviving folklore learning in an interactive and meaningful way. However, as the Research did not cover the development and evaluation stages, further research is recommended to test the validity, practicality, and effectiveness of the media through implementation and empirical testing.

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