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Development of the Blended Learning AMIR Model Based on the Edu Virtual Laboratory History

Amirullah[1*], Darman Manda[2], Syamsu A. Kamaruddin[3]

[1-3]*Education Science, Universitas Negeri Makassar, Makassar, Indonesia*

Abstract

This study aims to develop and validate the Blended Learning AMIR (Augmentation, Modification, Interactive, and Reflection) model for history education. The AMIR model represents an innovative integration of key elements from various established learning models, reconstructed to address the pedagogical demands of 21st-century learners. A distinctive feature of this model is its foundation in digital pedagogy, specifically through the utilization of the Edu Virtual Laboratory for History, which facilitates interactive and immersive learning experiences. The validation process yielded an average score of 3.69, indicating that the BL-AMIR model is considered valid by expert reviewers across all core components. These components include (1) syntax, (2) social system, (3) principles of reaction, (4) support system, and (5) instructional and nurturant effects, which collectively define the model's structure and expected learning outcomes. The findings reveal that the BL-AMIR model enhances student engagement with authentic historical content, promotes problem-focused learning, and encourages meaningful collaboration. Furthermore, students demonstrated increased awareness of the benefits of combining online and face-to-face learning environments. The study concludes that the BL-AMIR model offers a significant pedagogical innovation for enhancing historical thinking and collaborative learning in blended educational settings.

Keywords: Development; Blended Learning Model; AMIR Model; Digital Pedagogy; Edu Virtual Laboratory History.

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Introduction

In recent years, digitalization has significantly transformed various aspects of human life, including the education sector (Latifah et al., 2022; Setiani & Novariyanto, 2021). In the Indonesian context, the urgency to incorporate digital technologies into the history learning process has become increasingly apparent. The rapid evolution of educational paradigms demands that history education not only convey factual knowledge but also embrace technology to foster critical thinking, student engagement, and contextual understanding (Putri, 2022; Yasin & Syarifuddin, 2022).

The integration of digital tools into history education represents a strategic response to the shifting needs of 21st-century learners. It offers a pathway to address the monotony often associated with conventional history instruction, which is frequently limited to text-based narratives and passive memorization. When implemented effectively, digital platforms can transform history learning into an interactive, immersive, and inquiry-based experience (Bates, 2005; Hariyono, 2023; Yusril, 2019; Firmansyah, 2024). This transformation is particularly vital in teaching complex and abstract historical concepts that require visualization and contextual interpretation.

To achieve this, a systematic and well-designed instructional framework is necessary. Instructional designs must be aligned with pedagogical principles and tailored to the characteristics of historical content, ensuring that the learning process is both meaningful and learner-centered (Kristanto et al., 2024; Romualdi & Firmansyah, 2024). The adoption of digital-based learning models serves not merely as a technological enhancement but as a comprehensive pedagogical reform that encourages student autonomy, collaboration, and active learning (Muthoharoh & Miftahuddin, 2021; Sulastri et al., 2024).

Learning models function as the backbone of instructional planning and decision-making. In history education, they guide educators in selecting appropriate strategies, technologies, and assessment methods to meet instructional goals (Wardoyo et al., 2021). A well-developed model enables structured learning experiences, supports students' cognitive

*Corresponding author.
E-mail address: amirullah8505@unm.ac.id (Amirullah)

and affective engagement, and ultimately leads to more effective achievement of curriculum outcomes (Zahra, 2024). Moreover, when digitalization is embedded within these models, the learning process becomes more contextualized, relevant, and enjoyable for students (Driscoll, 2002; Thorne, 2003; Widiastuti et al., 2024).

The development of interactive, multimedia-based learning models has been advocated by educational theorists such as Benny A. Pribadi, who emphasizes that such models should provide a practical and operational framework for developing technology-integrated learning environments. His development framework consists of three essential phases: definition, design, and development (Pribadi, 2009; Al-Tabany, 2017). This framework ensures that educational content is not only well-structured but also effectively delivered to accommodate diverse learning preferences and contexts.

However, challenges persist. A study by (Nadila, 2024) identified three primary issues that diminish student interest in history learning: (1) the use of outdated learning models that fail to spark motivation; (2) the limited role of teachers as facilitators who inspire and guide learners; and (3) students' dependence on "ready-made" knowledge from textbooks, which discourages critical inquiry. This phenomenon echoes the concerns of Abdul Rahman Hamid, who noted that students often consume pre-processed information rather than engaging in active knowledge construction (Diaz & Cartnal, 1999; Surachman et al., 2024). In addition, many students lack foundational knowledge about historical objects, sites, and contexts. This gap in understanding makes it difficult for learners to connect with historical narratives, especially those related to ancient events or unfamiliar locations (Arsyad, 2016; Anderson, 2008). As a result, history is often perceived as abstract, irrelevant, and tedious, leading to a decline in student motivation and participation.

To address these challenges, there is a critical need to design a history learning model that not only incorporates digital tools but also enhances student engagement through simulation, visualization, and interactivity. The Edu Virtual Laboratory History represents a promising innovation in this area. It provides a virtual space where learners can explore historical events, artifacts, and environments, thus promoting a deeper and more meaningful understanding of the past (Dewantara, 2009; Syafar et al., 2024). When combined with a structured learning model that emphasizes Augmentation, Modification, Interactivity, and Reflective learning (AMIR), the potential to revitalize history education becomes even more substantial.

Method

This study applies a Research and Development (R&D) approach, specifically adapted from the developmental research model introduced by Borg and Gall (Pusba et al., 2021). The rationale for adopting this method lies in its focus on developing innovative educational products tailored to actual user needs, rather than on testing pre-existing theories. The primary aim is to create a history learning model that is both practical and effective for use in higher education and secondary schools (Rengkuan et al., 2024). Data collection was conducted using a combination of methods, including direct analysis of historical materials, interviews with individuals and groups, review of documentary evidence, and observation of educational practices. These data served as the foundation for designing a model intended to enhance digital metacognitive skills and improve students' academic outcomes in history education (Masruri et al., 2024; Sugiyono, 2016; Mahande et al., 2021).

To guide the development process, the study synthesized several instructional design frameworks, ADDIE, ASSURE, Borg & Gall, SAM, and Gerlach & Ely, into a coherent design structure. This combined approach was then organized using the 4D model developed by Thiagarajan, Semmel, and Semmel (1974), which consists of four key stages: Define, Design, Develop, and Disseminate. The full development process is illustrated in **Figure 1**, which outlines each step in detail from initial analysis to final adoption of the product.

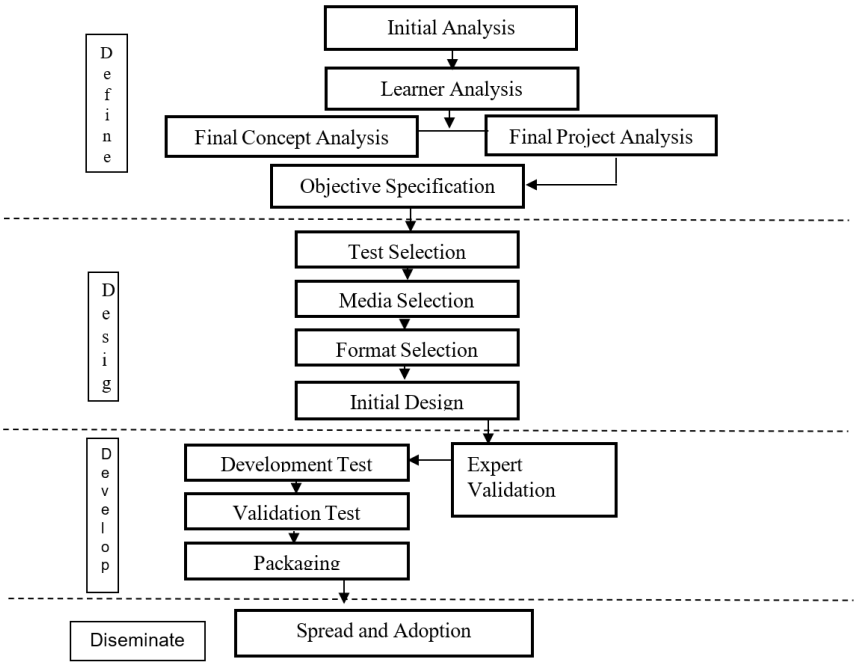

Figure 1. The 4D Development Model Process

The implementation of this model was carried out in two major phases: the pre-development phase and the model development phase. During the pre-development phase, a contextual analysis was performed through classroom observations, analysis of lecture documentation, and evaluation of student characteristics within the History Education program. This analysis aimed to identify existing challenges and to define the requirements for an effective learning model. The results were used to draft an initial version of a blended learning model grounded in the Edu Virtual Laboratory concept.

In the subsequent model development phase, the instructional framework was refined by establishing clear learning objectives and aligning them with the intended course learning outcomes. The preliminary model was subjected to expert validation to ensure pedagogical and technical soundness. Based on the feedback, revisions were made, and the model underwent small-scale testing involving both lecturers and students. Their responses were used to further improve the model's usability and instructional quality (Surachman et al., 2024). The final stage, dissemination, focused on the broader introduction of the model to the academic community, with the goal of encouraging its application in similar educational settings and supporting its long-term adoption and sustainability.

Results and Discussion

Result

The results of the classroom observations revealed a structured yet conventional approach to the delivery of lectures. The instructional activities observed included the following: (1) The lecturer initiated the session by greeting the students and conducting a roll call; (2) Learning objectives and core competencies to be achieved were communicated clearly; (3) Lecture content was presented through digital media, primarily using slide-based presentations (e.g., PowerPoint); (4) A discussion segment was opened to engage students; (5) Several students responded by asking questions; (6) The lecturer provided answers and clarifications to those inquiries; (7) Additional prompts were given by the lecturer to encourage further student discussion; (8) Independent assignments were distributed for students to complete outside of class hours; (9) The session was concluded with a summary of key points and a preview of the next topic; and (10) The lecturer formally closed the session with a farewell greeting (Diaz & Cartnal, 1999; Samhati, 2009).

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Despite the structured format, further analysis of the learning implementation indicated several key issues. First, the instructional process remained dominantly lecturer-centered, limiting student autonomy and engagement. Second, no specific or innovative learning model was systematically applied, leading to repetitive instructional patterns. Third, the learning environment lacked interactive and student-driven dynamics, which contributed to decreased motivation and concentration among learners. Lastly, the integration of digital tools and engaging media features was minimal, resulting in underutilized potential for enhancing the learning experience. In addition, a review of the teaching materials used during instruction showed that they remained largely static and text-based, with limited adaptation to digital formats or multimodal content. The materials lacked features that could support more engaging or differentiated instruction, such as gamification elements, interactive simulations, or multimedia integration materials (Haling, 2004; Radianti et al., 2020; Rusman, 2011). These findings suggest the need for a more dynamic and student-oriented instructional design, supported by digital innovation to foster improved engagement and learning outcomes.

Table 1. Prototype of blended learning

Activity Phase	Lecturer Activities	Student Activities
Phase 1 (*Augmentation)* Information search from various sources of information available in ICT (online), books, and delivery through face-to-face in class to activate students	1. The lecturer conveys learning outcomes 2. Lecturers provide initial motivation 3. Lecturers make an appraisal of previous learning 4. Lecturers facilitate, assist, and supervise students in the process of exploring the material, so that the information obtained remains relevant to the topic being discussed, and is believed to be valid	1. Students listen to the lecturer's explanation 2. Students try to recall the material previously learned 3. Students play an active role in class activities such as asking questions, looking for references from textbooks, and the internet/smartphone
Phase 2 (*Modification)* Interpret and modify independently and elaborate information personally and communally	1. Lecturers guide students in group discussions to inventory information, interpret, and elaborate material concepts towards an understanding of the topic being taught. 2. Lecturers confront ideas or ideas that already exist in the minds of students with the results of the interpretation of information/knowledge from various available sources (Yusril, 2019). 3. Lecturers encourage and facilitate students to communicate the results of interpretation and elaboration of ideas face to face or using ICT facilities (online), in groups or personally. 4. Lecturers scaffolding students in working on problems both personally and in groups. 5. Lecturers assign students to master the material by giving open and rich problems.	1. Students form groups and discuss with their group mates 2. Students record the results of their discussions, collect data and information for further study in the interim report. 3. Students present the results of their discussions and data collection with their respective group mates 4. Students conduct a question-and-answer process on the material that has been presented 5. Students make conclusions on the answers that have been made in accordance with the existing problems 6. Students listen to the assignments submitted 7. Students work on the assignments given both independently and in groups.
Phase 3 (*Interactive)* Reconstructing knowledge through the process of assimilation of innovation and accommodation based on the results of analysis, discussion, collaboration and formulation of conclusions from the information obtained	1. Lecturers justify the results of exploration and academic material acquisition, and together with students, conclude the material being taught. 2. Lecturers help students synthesize knowledge in their cognitive structure. 3. Lecturers assist students in constructing/reconstructing material through the process of accommodation and assimilation based on the results of analysis, discussion, and formulation of conclusions on the material being taught	1. Students justify the results of an in-depth exploration of the material based on the results of the discussion 2. Students actively respond to the reinforcement made by the lecturer and classify the knowledge that has been obtained.
Phase 4 (*Reflection)* Evaluate individual and group activities	1. Lecturers assess the achievement of student competencies (knowledge, skills, and attitudes). 2. Lecturers identify strengths and weaknesses in learning methods. 3. Lecturers assist students in constructing material through the process of accommodation and assimilation based on the results of analysis, discussion, and formulation of conclusions on the material being taught.	1. Students synthesize knowledge in their cognitive structure 2. Students conclude the results of the learning process according to the material that has been taught.

Activity Phase	Lecturer Activities	Student Activities
	4. Lecturers provide feedback to students for improvement 5. Perform the formulation of conclusions (Setiyani, 2021).	

Validation of the AMIR Blended Learning model to improve learning effectiveness is based on the results of validation conducted by expert validators. The model development stage has produced a number of products in the form of model development results and learning tools, and instrument development. What is developed is presented based on the components. All products produced before being tested in the field were first tested for validity by experts and practitioners. The results of the validation of the BL-AMIR learning model components for each aspect are summarized as contained in the following Table 2.

Table 2. Result of the validity assessment of the BL-AMIR learning model book

No.	Validator Assessment	Indicator		Ki	Description
		V1	V2		
1	Introduction	3.5	3.75	3.62	Very Valid
2	Supporting Theory	3.5	3.76	3.63	Very Valid
3	Model Description	3.7	3.5	3,6	Valid
4	Learning Outcomes	3.5	3.67	3.59	Very Valid
	Average	3.6	3.7	3.6	Very Valid

The results of the validation of the AMIR Blended Learning model book in Table 2 show that the Introduction, Supporting Theory, Model Description, and Learning Outcomes are declared "very valid," so that they are considered suitable for testing. Based on this data, the Blended Learning AMIR learning model is declared valid. Thus, the components of the learning model developed have met the criteria of validity and feasibility for use, because revisions have also been made as suggestions and criticisms, and input from the board of experts (validators), which makes the model components very feasible to use in this research and development.

Table 3. Result of the lecturer's response to the BL-AMIR learning model

No.	Indicator Assessment	Validator			Ki	Description
		V1	V2	V3		
1	Learning device	3,6	3,8	3,9	3,8	Very Practical
2	Feasibility of presentation	3,5	3,5	3,8	3,6	Very Practical
3	Feasibility of language	4,0	3,0	4,0	3,5	Practical
4	Learning	3,5	3.5	4,0	3,7	Very Practical
Average					3,63	Very Practical
Percentage					90,63 %	Very Practical

The results of data analysis on lecturers' responses to the implementation of the BL-AMIR model are presented in Table 3, which overall indicates that the model has a high level of practicability. The average score for the overall practicability of the model, based on lecturers' responses, is 3.63, which falls into the very practical category. More specifically, the average scores for the aspects of learning tools achievement, presentation feasibility, and learning assessment achievement are 3.8, 3.6, and 3.7, respectively, each of which is also categorized as very practical. Meanwhile, the aspect of language feasibility received an average score of 3.5 and is categorized as practical. These findings indicate that, in general, the BL-AMIR model is considered practical and feasible for implementation in the learning process, according to the lecturers' perceptions.

Discussion

Based on the results of research and development contains an explanation of the theoretical and empirical studies of the research findings and the development of the BL-AMIR learning model. Sequentially, the research findings are presented as follows: (1) Development Needs of BL-AMIR Learning Model, (2) Design of BL-AMIR Learning Model, (3) Model Validity Level, (4) Model Practicality Level. The purpose of the needs analysis carried out is to determine the learning that is the limitation of model development. The initial stage in this research is Define (defining) the needs in the learning process and collecting various information related to the product to be developed. In the first stage, conducting an analysis related to the needs of the learning model in higher education so that it can analyze several

learning objectives through theoretical studies, empirical studies, and analysis related to model development needs. Based on the results of the analysis of the Semester Learning Plan (RPS), the results indicate that it generally applies a cooperative learning model. Based on these findings, the BL-AMIR model adopts cooperative learning as one of the bases in model development (Purwanta, 2019; DePorter et al., 2010; Munir, 2012).

The blended learning design in the BL-AMIR model goes through three stages, namely, (1) planning, (2) implementation, and (3) assessment. Each of these stages can be explained as follows: 1) Planning, the implementation of this model takes several activities, such as identification of learning needs, where lecturers and students determine what material will be applied to the approach. 2) Implementation, lecturers act as facilitators and act as learning resources to facilitate learning activities with steps (1) Augmentation, (2) Modification, (3) Interactive, and (4) Reflection.

The average value of the validity of the BL-AMIR model in Table 2 is 3.69, which means that the BL-AMIR model qualifies as a valid learning model because all of its constituent components are declared "valid" by the validator team. The validity value is closely related to the state-of-the-art model that it refers to. There are five important components as a description of a learning model, namely (1) syntax, (2) social system, (3) reaction principles, (4) support system, and (5) instructional impact and accompanying impact, namely the results that will be achieved by students after taking lessons.

Conclusions and Suggestions

Conclusions

The findings of this study highlight the importance of aligning instructional strategies with students' cognitive development, particularly in history education. The needs analysis conducted in the early stages revealed that students require structured support to enhance their intellectual organization of subject matter. The Introduction to History course, in particular, benefits from an approach that promotes student autonomy and independent learning. In this context, the implementation of the BL-AMIR (Blended Learning – Adaptive Metacognitive Interactive Resource) model is seen as a strategic solution to address these needs. The development phase of the BL-AMIR model involved designing key instructional components such as digital learning media, semester learning plans (RPS), and assessment instruments to evaluate learning effectiveness. These components were validated by experts and found to be theoretically grounded and practically viable, indicating that the model meets established criteria for instructional design. Furthermore, the implementation of the BL-AMIR model in the classroom demonstrated its practicality, with observations confirming that the model supported effective classroom management and enhanced student engagement in learning activities.

Suggestions

Based on the conclusions drawn from this study, several recommendations are proposed. First, the BL-AMIR learning model is well-suited for adoption at the university level, particularly in History Education and Social Science Education programs. It offers a structured yet flexible learning framework that encourages active student participation. Second, as higher education continues to embrace digital transformation, it is important to leverage blended learning not only as a response to crises like the COVID-19 pandemic but also as a long-term strategy for fostering independent and collaborative learning. The BL-AMIR model has the potential to facilitate this transition by providing a balanced combination of online and face-to-face learning experiences. Finally, institutions are encouraged to consider the BL-AMIR model as an alternative instructional approach that can increase student motivation, improve time management in learning, and enhance overall academic performance through more engaging and adaptive educational practices.

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