

Effectiveness Model Blended Learning AMIR (Augmentation, Modification, Interactive, Reflection) Based on Edu Virtual Laboratory History

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Abstract

This research aims to: To describe the effectiveness of blended learning model based on Edu Virtual Laboratory History. And produce model book products and learning tools in improving the effectiveness of history learning. This research is an R&D research by adopting the 4-D model design (define, design, Develop and Disseminate). Data collection techniques were observation, interview, test, questionnaire and documentation. This research uses learning implementation observation instruments, student learning outcomes assessment tests and learning tool validation sheets. The data analysis technique was carried out by (1) analysing the level of validity (2) analysing the level of practicality, (3) analysing student and lecturer response data. The results of this study indicate that the need for the development of a Blended Learning model based on Edu Virtual laboratory History, to increase the effectiveness of history learning. The results of the validation test showed that the model book, implementation guide, learning tools and research questionnaires were declared valid based on the assessment.

Keywords: effectiveness, model blended learning AMIR, edu virtual laboratory history.

1. Introduction

The development of information and communication technology has encouraged innovation in education, especially in learning methods. One method that has been widely used is blended learning, which is a combination of face-to-face and online learning. This blended learning model allows students to learn flexibly, interactively and more meaningfully (Anderson, 2008).

In the context of history learning, the use of Edu Virtual Laboratory History which is a digital-based virtual laboratory provides a more concrete and interesting learning experience for students. The AMIR (Augmentation, Modification, Interactive, Reflection) Blended Learning Model is an approach that integrates questioning, modelling, investigation n, and reflection to increase student engagement and understanding in history learning (Arends, 2007).

The reality that exists in learning history so far in the classroom according to Abd. Rahman Hamid in a book entitled Learning History that educators still dominantly use textbooks that have been prepared or available according to the subject, which we often encounter still with the old book used to study on lecture topics. In this model, students are presented to read finished books, according to Abdul Rahman Hamid that the habit of students consuming 'finished goods' or instant knowledge products has been mixed and interpreted by the author of the book. (Hamid, 2014, p. 56)

This model makes students only accept knowledge and interpretation of history as it is, without searching and finding critically and interpreting historical events (Bates, 2005). Therefore, we often find the problem of boredom in the learning process in class because it is only fixated on one book as a reference, this is what makes it difficult for students to increase their motivation and interest in learning. The importance of interesting and innovative learning models and resources for earlier and more practical to explore the process of historical events (Garrison & Kanuka, 2004). In addition, the current problem is the lack of basic knowledge for students about the object or location where the historical event took place. This makes it difficult for students to observe and understand the historical study of one historical object that is studied or explained in class, let alone the event itself (Boelens, Voet, & De Wever, 2018).

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The integration of technology into education has led to the emergence of blended learning, a pedagogical approach that combines traditional face-to-face teaching with online learning experiences. Blended learning leverages the strengths of both modalities, offering a flexible and engaging learning environment that can meet the diverse needs and learning styles of students (Anthony et. al., 2022). This approach seeks to combine the best aspects of ICT-based learning with conventional face-to-face teaching, creating a stimulating environment and enhancing the quality of education (Hashim, N., & Hamidon, Z, 2022). Blended learning not only replaces individual methods but also creates new learning experiences for students, and can be seen as a method for designing and implementing educational curricula, combining the characteristics of face-to-face and e-learning through various technologies (Alkhatib & Jaradat, 2021). The online component of blended learning allows learners to learn anytime and anywhere according to their plans, while in-class activities will provide instruction from teachers and interaction between peers, which will improve the absence of a sense of group and solve the problem of loneliness in online learning (Afifi, 2025; Huang, Kuang, & Ling, 2022)

In this research, problem identification was conducted with the aim of developing a Blended Learning model for history learning. This development involves the addition of the concept of Augmentation, Modification, Interactive, and Reflection abbreviated (AMIR). In addition, the learning design applied is based on a digital technology approach, especially through Edu Virtual Laboratory History. Model development is the result of reconstruction of various relevant learning models. In addition, it is developed by modifying the learning steps based on the learning theories and syntax of different learning models. The transformed results of different learning models produce a new model syntax, namely a learning model with AMIR syntax based on Edu Virtual Laboratory History (Kurniawati, 2014).

For example, the digitisation of historical objects, such as the restoration of Borobudur Temple during the colonial period, has been done through various website channels. This is a concrete example of the re-production of history in digital form, which serves as the collective/metakognitive memory of society (Munir, 2013). Therefore, the need for a learning model that can fulfil learning and teaching needs is increasingly urgent. The blended learning model based on Edu Virtual Laboratory History is considered an effective, innovative solution to increase students' creativity, understanding and historical awareness, especially in learning History.

In the current learning context, the Blended Learning Model is a relevant choice, especially when conditions require a combination of various learning environments to achieve learning goals. For example, when distance learning is not entirely necessary, but face-to-face learning sessions are still needed. The application of Blended Learning is important in situations where (1) the teaching and learning process is not limited to face-to-face meetings, but involves the use of online technology to expand learning time, (2) supports continuous communication between lecturers and students, and (3) helps accelerate teaching (Prayitno, 2016). The development of a Blended Learning model based on Edu Virtual Laboratory History for students in the History and Social Sciences Education Department is expected to overcome the gap between expectations and reality. This expectation involves the ability of educators to implement the History learning process with the Blended Learning Model, based on Edu Virtual Laboratory History, and utilize learning that is in accordance with the needs of the History and Social Sciences Education Department. The main focus is on the Introduction to History course as a basic course that needs to experience effective digitalization of historical learning objects in digital form (Herliana, 2015).

It is hoped that students can optimize learning, improve critical understanding of History, and the ability to understand aspects related to the science of History. This aims to improve creativity, academic skills, historical awareness, and nationalism of students by understanding historical objects or historical sources with the Blended Learning model based on Edu Virtual Laboratory History, without the need to conduct reviews or go to the field. Based on these background facts, researchers consider it important to overcome obstacles to history learning by developing a digital-based learning model. This approach includes the integration of history learning materials into a digital technology system, especially at the University level, especially in the History Education Study Program, Faculty of Social Sciences and Law. The expected results of this study include the Blended Learning Model based on Edu Virtual Laboratory History, as well as learning tools that are suitable for use, with the aim of contributing to improving the learning process in the world of Education, especially in the field of History Education that is in accordance with the expertise of researchers and at the same time building the digital competence of today's global society.

2. Literature Review

2.1. Blended Learning

Blended Learning, a term derived from English, consists of two elements, namely Blended and Learning. In this context, 'Blend' indicates a mixture, indicating a variation in the learning pattern applied. Meanwhile, 'Learning' refers to the general process of learning, so Blended Learning can be interpreted as a learning model that involves a mixture or combination of various learning patterns. According to Mosa, the blending involves two main elements, namely classroom learning and online learning (Mosa, 2006).

Blended Learning essentially combines the advantages of face-to-face and virtual learning. The importance and positive impact of blended learning lies in its potential. This approach provides real advantages in creating an optimal learning experience by presenting learning materials at a time and place that suits each individual, Blended Learning forms a boundary that is universal and global. It brings learning groups together across cultural boundaries and diverse time zones, making it one of the most important advances in 21st century education. Blended Learning, as described by Semler in (Husamah, 2014) encapsulates the best combination of online learning, face-to-face learning and real-world experience. Driscoll (2002, p. 164) describes blended learning as an attempt to integrate online learning with face-to-face learning.

2.2. Concept of History Learning

According to Burke (2001) in the beginning people were not familiar with reading and writing so that all history was oral history, their memories or experiences were conveyed orally from one generation to the next. Then according to Leopold Von Ranke revealed that history is a document 'no document no history' no document then there is no history, this provides an analysis of historical writing in the 20th century which focuses on the study of facts of events proven by documents (Hamid, Rahman, & Madjid, 2011). The historical awareness of the Indonesian people then developed at a more advanced stage, where their experiences, which were previously passed down orally in the form of symbols and carvings, are now described in writing, buildings, even through digital (Hamid, 2014).

The new paradigm of history learning as a means of national education, especially in the application of normative history. History learning as a sub-system of the education activity system, is an effective means to improve the integrity and personality of the nation through the teaching and learning process. The importance of the ability to apply effective and efficient learning methods where the system of education and learning activities is a complex social system, placed as a joint effort to meet educational needs in order to build and develop themselves (Aman, 2011).

2.3. Edu Virtual Laboratory History

The reality in the field found in learning history that has been described above is important for the author to develop a Blended Learning model based on Edu Virtual Laboratory History by presenting historical learning resources that make it easier for students to learn actively, independently to understand historical objects and sources. Edu Virtual Laboratory is a simulation that replicates a real location and usually consists of a sequence of videos or still images (Francescucci & Rohani, 2019). The use of this media also involves multimedia elements such as sound effects, music, narration, and text. The term 'Edu Virtual' is often used to describe panorama-based video and photographic media that display an uninterrupted view. These panoramas can be a series of photographs or a panning video. However, the phrases 'edu panorama' and 'virtual' are more often associated with the development of virtual edu in a digital context, created using a fixed camera. Such virtual edu consists of a series of photos taken from a single point of view, where the camera and lens rotate around what is known as the parallax point (the point behind the lens where light converges). The basic principle of this virtual edu uses multimedia techniques in general. Multimedia refers to the use of computers to display and combine text, graphics, audio, and video with links and tools so that users can interact with them (Juzma, Murdowo, & Adriyanto, 2025).

3. Research Methods

This research is a Research and Development (R&D) or Borg and Gall development research. The selection of this type of research, based on the purpose of Research and Development (R&D) is not to formulate or test the theory but to develop a learning model to the needs of the subject then develop effective products for use in universities and schools (Gay & Geoffrey, 2018). Data is obtained from the results of collecting historical sources directly, individual data, groups, the contents of documentary materials and other sources of information which aim to improve digital

metacognitive skills and improve history learning outcomes. Researchers are committed to stating quality improvement, learning model development research is research that is oriented towards developing or improving a science in overcoming a problem directly through action or self-reflection based on the results of the study, which aims to improve or improve educational services that must be held in the context of learning in the classroom (Sugiyono, 2012). As stated earlier, this research is a type of research and development (research & development) using the 4D design from Thiagarajan, Semmel, & Semmel (1974) (Priansa, 2017). This development theory consists of four main stages, namely: define, design, develop, and implement.

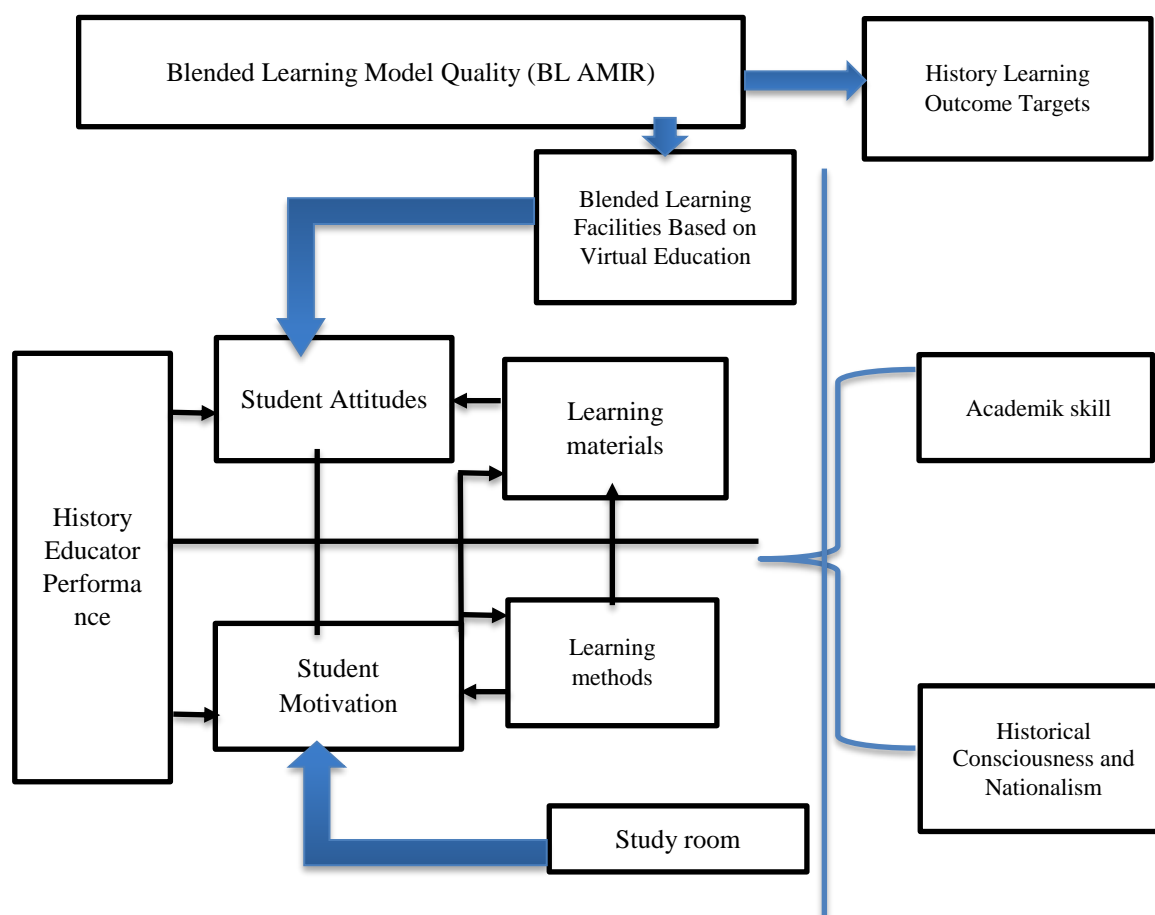


Figure 1. The quality paradigm of the Blended Learning (BL) Model of history based on Edu Virtual Laboratory History

4. Results and Discussion

4.1. Results

4.1.1. Descriptive Analysis

In an experimental study conducted in the history education study programme of the Faculty of Social Sciences, 43 early semester students were divided into two groups, namely: Experimental group (43 students) who used the AMIR Blended Learning model based on Edu Virtual Laboratory History. The measurement results shown on Table 1.

4.1.2. Interpretation

The experimental group showed higher mean scores on all three variables than the control group. The t-test results showed statistically significant differences ($p < 0.05$) in learning motivation, material understanding, and critical thinking skills between the experimental and control groups. This section is to answer the formulation of the problem “how is the effectiveness of the AMIR blended learning model to improve the effectiveness of History learning in

higher education”. By looking at whether there is a change in value before the BL-AMIR model is used and after the model is applied. The analysis used is inferential statistical analysis with SPSS programme.

Table 1. Measurement Results of Learning Motivation, Material Understanding, and Critical Thinking Skills

Variabel	Experimental Group (Mean ± SD)	Control Group (Mean ± SD)	Statistical Test (t)	P value
Learning Motivation	84.5 ± 6.0	72.8 ± 7.5	5.12	<0.001
Material Understanding	86.7 ± 5.4	74.3 ± 6.8	5.46	<0.001
Critical Thinking Skills	80.2 ± 7.1	68.9 ± 7.9	4.12	0.001

4.1.3. Normalisation test

To conduct inferential statistical analysis in testing the hypothesis, it is necessary to first test the basics including the normality test. This normality test is intended to determine whether the data used is normally distributed or not. The normality test was carried out on pretest and posttest data. The data is normally distributed if it meets the normality criteria, namely if Sig>a (0.05) and is not normally distributed if Sig<a (0.05). Based on the results of SPSS 26 data processing, the Table 2 shown the data were obtained.

Table 2. Normality Test of Pretest and Posttest Data BL-AMIR Model

	Kolmogorov-Smirnov2			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Pretest	.129	34	.167	.964	34	.311
Posttest	.142	34	.081	.964	34	.044

Based on Table 2, it shows that the pretest normality test results obtained a Sig value = 0.311 > 0.05 while the posttest normality test results obtained a Sig value = 0.044 < 0.05. This shows that the pretest and posttest data fulfil the normality test criteria so it can be concluded that the BL-AMIR model is normally distributed.

The Figure 2 illustrating the significance value of the Pretest and Posttest using Kolmogorov-Smirnov and Shapiro-Wilk.

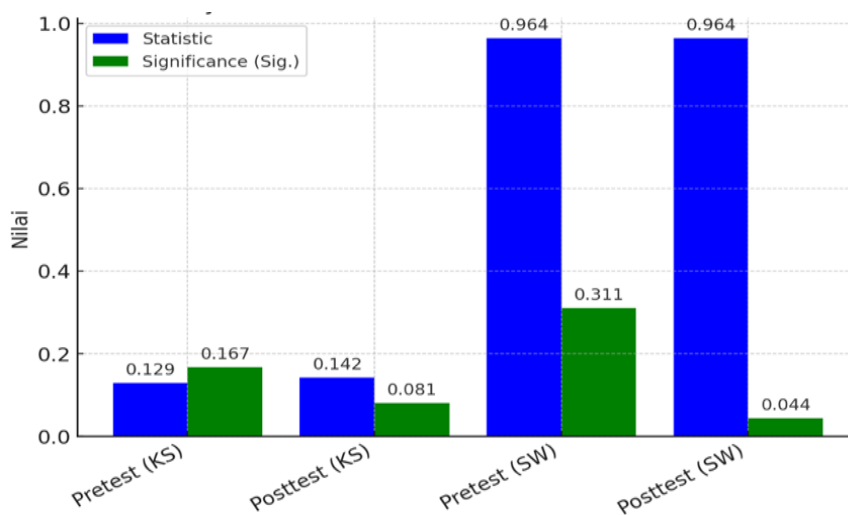


Figure 2. Pretest and Posttest using Kolmogorov-Smirnov and Shapiro-Wilk.

Based on the prerequisite test of statistical analysis, it was found that the data of BL-AMIR model results in this study were normally distributed. Therefore, to see the difference in learning effectiveness, it can be measured using non-parametric inferential statistics with a significance level of a=0.05 (2-tailed) through the use of the t-test formula, namely the Independent Sample Test. The following is the result of t test

Table 3. Test Results Paired Samples Statistics

		Paired Sample Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	3.4356	34	.12171	.02087
	Posttest	3.8135	34	.07874	.01350

Based on Table 3, a summary of the descriptive statistical results of the two samples studied, namely the pretest and posttest scores are shown. For the pretest value, the average learning effectiveness value or mean is 3.4356. while for the posttest value, the average learning effectiveness value is 3.8135. The number of students used as research samples is 34 people. For the value of Std. Deviation (Standard Deviation) on the pretest of 0.12171 and posttest of 0.07874. Finally, the Std.Error Mean value for the pretest was 0.02087 and for the posttest was 0.01350. The effectiveness of the BL-AMIR model can be seen based on the instructional and accompanying impacts of the BL-AMIR model which will be discussed separately in the BL-AMIR effectiveness section. The instructional impact of BL-AMIR includes the impact on learning effectiveness. Based on the results of data analysis which shows that there are student learning outcomes after applying the BL-AMIR learning model.

Based on the results of inferential analysis through paired sample test, a significant value was obtained as well as an effect on the effectiveness of learning with the application of the BL-AMIR model, this means that the application of the BL-AMIR model is good to use and can improve student learning outcomes.

The ability of learning effectiveness by using the BL-AMIR model has developed well. This is evident in the normalised gain analysis which shows an increase. The initial test results showed that the average student scored in the sufficient category with a percentage of 62.06% while in the posttest the average student scored in the excellent category with a percentage of 87.79. With an average gain index of 0.68 or a 'moderate' increase in implementation. Indicating that the results of student learning abilities have increased. When referring to the gain index (Hake, in Sudibyo et al., 2016), it is in the moderate category and students are said to be successful (complete) if they get a score greater than or equal to the value of 75 (minimum score).

4.2. Discussions

The effectiveness of the BL-AMIR model can be seen based on the instructional and accompanying impacts on the BL-AMIR model which will be discussed separately in the BL-AMIR effectiveness section. The instructional impact of BL-AMIR includes the impact on learning effectiveness. Based on the results of data analysis which show that there are student learning outcomes after the BL-AMIR learning model is applied. Based on the results of the inferential analysis through the paired t-test (paired sample test), a significant value was obtained and also influenced the effectiveness of learning with the application of this BL-AMIR model, meaning that the application of the BL-AMIR model is good to use and can improve student learning outcomes.

The effectiveness of learning ability using the BL-AMIR model has developed well. This is evident in the normalized gain analysis which shows an increase. The initial test results showed that the average student obtained a score in the sufficient category with a percentage of 62.06% while in the posttest the average student obtained a score in the very good category with a percentage of 87.79. With an average gain index of 0.68 or an increase in "moderate" implementation. Showing that the results of student learning abilities have increased. Referring to the gain index (Hake, in Sugiyono et al., 2012), it is in the moderate category and students are said to be successful (complete) if they get a score greater than or equal to the score of 75 (Minimum score). Learning is said to be successful classically if at least 80% of students achieve a complete score. This shows that the BL-AMIR learning model that was developed has been effective.

The BL-AMIR learning model was developed for the purpose of increasing the effectiveness of learning by improving students' understanding of History and metacognition with the hope that students can develop their potential abilities optimally, so that they can have the abilities needed to meet the demands of the world of work, the development of science and technology, art, religion, and the dynamics of global development.

5. Conclusion

The BL-AMIR Learning Model is declared practical based on the results of observations on the implementation of the BL-AMIR Learning Model, learning management, and increasing student learning activities, all of which are well implemented. The BL-AMIR Learning Model is declared effective based on the results of testing the effectiveness of student learning, and is responded positively by students and lecturers. The BL-AMIR learning model causes students to focus on real learning content, and focus on problems, the BL-AMIR learning model causes students to be more aware of the importance of implementing a combination of online and offline learning and the BL-AMIR learning model can involve students in productive teamwork, namely collaborative

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