

# Development of Android-Based Multimedia Media (M2BA) to Improve Students' Chronological Thinking in Indonesian History Learning in the Pre-aksara Period

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**Abstract:** This study aims to describe the media design process and produce appropriate, practical, and effective media to improve chronological thinking skills and as a solution to the lack of variety of media used by teachers and students' lack of chronological thinking skills, M2BA products were developed. The results of this study were obtained from the description of the first stage of research, namely needs analysis as a supporting factor for the need for M2BA media development. At the development stage, a media draft is produced which will be tested for feasibility by experts and the results of the analysis of the feasibility test for material experts obtained an average of 3.46, media experts with an average of 3.4, and linguists with an average of 3.41 from expert judgment. eligible criteria. The effectiveness test with independent sample t-test posttest control class and posttest experimental class then obtained the value of sig. (2-tailed)  $0.000 < 0.05$  in the sense that  $H_a$  is accepted and  $H_0$  is rejected. In other words, there is an effect of using M2BA on students' chronological thinking skills. This study concludes that M2BA media is feasible, practical and effective use in improving students' chronological thinking skills in learning Indonesian history in the pre-literacy period.

**Keywords :** M2BA Media, Chronological Thinking Ability, History Learning

## I. INTRODUCTION

History learning has the aim that each student builds awareness about the importance of time and place which is a process from the past, present, and future so that students realize that they are part of the Indonesian nation that has a sense of pride and love for the homeland that can be implemented. in various lives, both nationally and internationally, Widja (1989) in (Zahro et al., 2017). That is, learning history is not only memorizing and remembering historical events that have passed. But history learning has a goal so that students can develop competence to think chronologically and have past knowledge to be able to understand and explain the process of development and change in society with socio-cultural diversity to find national identity, and can grow their identity as a part of the community an Indonesian nation.

Based on the demands of the 2013 curriculum, the ability to think chronologically is considered very important for students because the true purpose of learning history has three components to be achieved, namely academics, nationalism and historical awareness. , skills are divided into two, namely soft skills and hard skills in learning history. Soft skills in question are historical thinking skills.

Peter Seixas & Peck, 2004 in (Ofianto, 2017), Historical thinking is defined as "historical cognition as determined as a process of seeking procedural knowledge and disciplinary investigations by students". Thus, historical thinking is a process of cognition or thinking that must be possessed by everyone in seeking the truth (Winerburg,

2006). In every historical thinking skill process, there will always be a thinking process. Thus, historical thinking skills will encourage the development of students' critical and creative thinking skills in learning. (Ofianto & Suhartono, 2015).

*Department of History University of California Los Angeles* (Ofianto & Ningsih, 2021) states that, one of the elements or standards of historical thinking skills that must be possessed by students is chronological thinking. Thinking chronologically in studying history can provide a complete description of the course of history in terms of specific aspects, which ultimately the benefits and meanings of the relationships between existing events can be drawn. Chronological thinking can function as a foundation for understanding history. If history can be understood as well as possible, then this can be an assistance in understanding history at a higher level. Thus, students studying history must have chronological thinking skills to identify time sequences, calculate calendar times, understand timelines, and reveal historical continuity and change. (Ofianto et al., 2022).

Based on the background of the problem from the observation that the teacher has not used media that can train students' chronological thinking skills and the chronological thinking ability test in class X IPS SMAN 4 Kerinci, it is known that the chronological thinking level of students is still low, it is necessary to make efforts to fix the problem so that history learning can take place well and learning objectives can be achieved. Students will more easily accept learning material if the learning is carried out in a fun way. Researchers offer one solution as a tool that can facilitate students and teachers in learning activities, especially in understanding historical events in good time sequence, namely by using M2BA media.

Improving the ability to think chronologically by using the media has been done previously, namely first, research (Sari et al., 2019) entitled "Multimedia Development of Chronological Thinking-Based History Learning for High School Students" Department of History Education, Faculty of Social Sciences, Padang State University. The results of his research show that multimedia-based history learning videos based on chronological historical events are suitable for use in history learning. Then, thesis (Pratiwi, 2021) entitled Development of Timeline Media Using the Focusky

Application to Improve Chronological Thinking Skills in Indonesian History Learning at the SMA/MA Level. The results of the media timeline research meet the criteria of being feasible and practical to use in the learning process of Indonesian history at the SMA/MA level.

This research was conducted in class X IPS SMAN 4 Kerinci in the academic year 2021/2022. The resulting product is in the form of media in the form of an android application designed using power point and combined with other applications. In the M2BA media, it explains the basic literacy material for KD 3.4, namely understanding the results and cultural values of the Indonesian pre-literate community and their impact on the life of the immediate environment.

## II. RESEARCH METHODS

The method used in this research is the Research and Development method. Research and Development is a research method used to produce a product and test the effectiveness of the product, which in this case is M2BA. As for the development model, the Borg and Gall development model which is modified and developed systematically is used. Emzir, 2010 in (Nafi'a et al., 2020) Research limitations and adjustments to research steps are possible due to a limitation. The Borg and Gall development model was modified into five steps, starting with requirements analysis, design, product development, feasibility testing or product validation, and finally testing the practicality and effectiveness of the product.

## III. RESEARCH RESULTS AND DISCUSSION

### A. Research result

The results of this study were obtained from the elaboration of the first stage of the research, namely the needs analysis as a supporting factor for the need to develop M2BA media. The results of the research at the design stage resulted in an initial framework of M2BA media. In the Development phase, a media draft was produced which would be tested for feasibility by experts and the results of the analysis of the feasibility test for material experts obtained an average of 3.46, media experts with an average of 3.4, and linguists with an average of 3.41 from the expert assessment produced M2BA that meets the criteria is suitable for use in learning Indonesian history in the pre-literacy period. Then, the results of the practicality test by the teacher obtained an average of

3.76 for each aspect, and the practicality results of the students obtained an average of 3.5.

Then, the effectiveness test was carried out with an independent sample t-test for the control class and a posttest for the experimental class. The average post-test score in the control class was 36.5 and the average post-test score in the experimental class was 54.5. Both groups of data have met the requirements of normal distribution and homogeneity. Evidence that the data is normally distributed from the control class can be seen from the output of the SPSS One-Sample Kolmogorov-Smirnov Test for the Asymp value. Signature (2-tailed) pre-test 0.458 and post-test with a value of 0.905 more than 0.05. Likewise with the Asymp value experimental class. Signature (2-tailed) pre-test 0.245 and post-test with a value of 0.330 more than 0.05. Then the proof of the homogeneity of the data from the control class can be seen from the output of the SPSS Test of Homogeneity of Variances, namely the value of sig. 0.756 and the experimental class with a sig. 0.108 then these two data groups  $> 0.05$ , so it can be concluded that the two data groups come from homogeneous data.

The results of the effectiveness test based on the SPSS output of the independent sample t-test show that value. (2-tailed)  $0.000 < 0.05$  in the sense that  $H_a$  is accepted and  $H_o$  is rejected. In other words, there is an influence in using M2BA in training students' chronological thinking skills. Thus, M2BA media is effectively used in learning Indonesian history in the pre-literacy period. This study concludes that M2BA media is feasible, practical, and effective use in improving students' chronological thinking skills in learning Indonesian history in the pre-literacy period.

## B. Discussion

Based on the stages of research methods that have been carried out, M2BA media in learning Indonesian history in the pre-literacy period which was developed through research procedures using the R&D method with the Borg and Gall development model resulted in history learning media that have appropriate, practical, and effective criteria for improving students' chronological thinking skills. This development is the result of the stages of needs analysis, design, development, feasibility test or product validation, and the trial stage, namely the practicality test and the effectiveness test of Indonesian history learning media.

From the results of the needs analysis stage, it is clear that historical learning currently does require learning tools or media that are by the demands of the 2013 curriculum that can keep up with the times and can train students' historical thinking which is one of the skills in historical subjects. Thus, to achieve historical thinking skills, one of the skills that students must have is chronological thinking. (APribadi, 2017) The use of technology that is used wisely will be able to support the creation of a quality learning process for students and teachers. Media technology is created to assist users in obtaining information and knowledge effectively and efficiently.

It is undeniable, that computers and the internet are a deadly duo that bridges information from one human brain to another. People can easily get free information with just a few touches of fingers in a short time and at a very low cost. Of course, because teaching materials and interaction processes have been successfully digitized. Fiedman in (Yuniastuti et al., 2021), describes this change as a flat world which refers to the condition in which the world has been liberated from the boundaries of distance and time. That is, what happened there can be known here. Likewise, when the event occurred, it can be known at this time. Thus, the results of the analysis of learning media needs will be the starting point for the development of learning media for students. The planning stage is the stage of doing the media creation process, in this study based on the statement according to (Nguyen et al., 2016) There are several aspects that are needed, namely events (events), Sets (settings), interaction (interaction) each of these aspects is packaged with the competency goals to be achieved. The presentation of M2BA in the media is visualized in various forms depending on the substance desired by the indicators in history learning. Events presented in the media are momentum events that can show changes from one event to another. Aspects of events, sets, and interactions that are adjusted to the achievement indicators are described as the statements that are most emphasized in this study, namely efforts to develop media that can support the improvement of chronological thinking skills in the assessment by experts who choose a score of 4 with a valid or feasible category.

The indicators referred to in it are as follows: The feasibility of the media is analyzed with a feasibility test by

experts and the first expert who judges is a material expert, the results obtained are feasible from two validators, namely from an expert lecturer an average score of 3.46 and one subject teacher Indonesian history at SMA N 4 Kerinci has an average score of 3.53. The aspects assessed are in accordance with the feasibility test questionnaire which contains aspects of history learning and chronological thinking skills.

The feasibility test by media or design experts was carried out by expert lecturers with the aspects assessed were the media aspect and the media suitability aspect with chronological thinking indicators, obtained an average score of 3.4 in the category according to the note that the developed media needed a little revision. Assessment of linguistic feasibility with 10 aspects that are assessed then 5 items of chronological thinking statements get a score of 3.41 with a decent category, then the media can be used with minor revisions.

Based on the results of the validation of material, media and language, it can be concluded that the M2BA media developed in terms of content and form has met the appropriate category. In terms of content in particular, it is in accordance with the curriculum used at this time. Likewise, the aspect of the ability of the media to train students' chronological thinking skills.

Testing the practicality of using the media was carried out by user trials of six history subject teachers and students by introducing the product and applying it in learning activities. The media was assessed based on the level of practicality and after being declared practical, the researchers conducted an effectiveness test in order to see the effect given by the M2BA media in training the level of students' chronological thinking skills.

Statham and Torell 1996 in (Fatirul, 2020), found that the application of cognitive theory has been able to develop the concept of learning more openly and in its application there has been an increase in learner-student interactions, the creation of joint learning activities, problems and the occurrence of the discovery process, as a result of learning in technology-based education based on cognitive theory. Technological devices are used to strengthen, expand and enhance human cognition.

Before testing the effectiveness of researchers applying M2BA media in the control class by referring to

Piaget's cognitive learning theory, the following is the implementation of M2BA in Indonesian history learning on pre-literacy materials:

[a] Grouping historical periodization

To achieve the indicator that students can classify historical periodization, it can be taught to students by providing stimulants about pre-literacy material. Then students are asked to pay attention to the M2BA media. In addition, the teacher briefly explains the media that is displayed by paying attention to the mapping of material that refers to indicators capable of classifying historical periodization. Then students were asked the question "besides historical periodization based on archeology and periodization based on lifestyle, are there other possibilities that can be used as the basis for grouping the periodization of the pre-literacy era?". Giving this question aims to activate the cognition of students so that interactions can be carried out between teachers and students can be established.

[b] Interpret historical events in their order

To achieve indicators, students can interpret historical events according to their sequence, it can be helped by using M2BA media. In addition to learning materials, students are asked to observe pictures and learning videos that have been provided in the media according to the periodization of the pre-literacy era. Each icon contains images and videos related to pre-reading materials. Then students are given statements and questions "after observing the material, pictures, and learning videos on M2BA media, are there any of you who can explain historical events in the pre-literacy period in sequence?".

[c] Establish a pattern of alternation of historical events and the duration or duration of an event

To achieve indicators of building patterns of alternation of historical events and the duration or duration of an event, students can be trained using M2BA media, because M2BA media has provided various types of pre-literate periodization, and based on this students are directed to detect based on what periodizations can be formed. Then students are also given questions to activate their cognition so that there will be increased interaction between students and teachers, thus creating joint learning activities and asking questions. The questions given are as follows: "Give other

examples and things that underlie the pattern of transition of historical events in the pre-literate era?"

[d] Identifying the temporal or temporal structure of a historical narrative or historical story

To achieve the indicator of identifying the temporal or temporary structure of a historical narrative or historical story, students' abilities can also be trained using M2BA media. In M2BA media it has been explained that there are many ways and types of division of pre-literacy periodization. Some divide periodization based on relics, periodization based on people's life patterns, periodization based on settlement patterns and there are also those who divide periodization based on archeology, namely the stone age, metal age, and iron age.

And to train students' ability to identify temporal structures while historical narratives are to ask students "why are there pre-literacy periodization divisions that do not mention in detail, for example, the stone age, metal age, and iron age. Then why is there a division of periodization of letters that divides the periodization that includes in detail, for example, the Paleolithic, Mesolithic, Neolithic, Megalithic, Perundagian (copper, bronze, and iron) eras?"

[e] Comparing alternative models for periodization or historical chronology

To achieve the indicator that students can compare alternative models for periodization or historical chronology, it can be helped by using M2BA media. The step is that students are asked to observe a video learning of literacy material on M2BA media, at minute 1:55 there is an explanation related to the division of the periodization of the pre-literacy period according to experts CJ Thomsen and R. Soekmono.

After the students were asked to watch the learning video. students were given questions and statements "after observing the learning video according to the statements of CJ Thomsen and R. Soekmono, what do you think is based on the making of the periodization by the expert?"

Giving statements and questions on each indicator to be achieved is a manifestation of the function of the cognitive theory which is expected to be able to develop the concept of learning more openly and in its application, there is an increase in teacher interaction with students, the creation of joint learning activities, problems and the occurrence of the

discovery process, as a result, learning in technology-based education based on this cognitive theory. Technological tools (M2BA) which are applied to the learning process are used to strengthen, expand and improve students' cognition.

After the stage of applying the media, the researcher gave a post-test to the control class and the experimental class. Then from the results of the post-test control and experimental classes, the effectiveness of the effect of using the media was tested through the Independent sample t-test test which had previously met the analysis requirements, namely normality and homogeneity tests, so significant results were obtained ( $H_a$  accepted and  $H_o$  was rejected). This means that there is an effect of using M2BA media on students' chronological thinking skills in Indonesian history subjects in the pre-aksara period.

Based on the above, it can be concluded that this can answer the problems that have been described in the background of the research problem, namely the lack of availability of media that can direct students in terms of increasing the ability to think chronologically in Indonesian history subjects class X IPS on basic KD 3.4 literacy material: understand the results and cultural values of the Indonesian preliterate community and their impact on the life of the immediate environment that is suitable for use. For this reason, M2BA media is expected to be used as an alternative learning media in the Indonesian history learning process, especially in terms of improving chronological thinking skills.

#### IV. CONCLUSION

Based on the results of the development of learning media carried out, researchers can conclude several things, as follows.

1. The development of learning media in the form of M2BA begins with the stage of needs analysis, which recognizes that media tools are needed that can emphasize and train students' chronological thinking skills.
2. The feasibility of M2BA media was obtained from the feasibility test of four experts with an overall average in the appropriate category. This can be seen from the feasibility sheet of learning media by the validator that has been implemented. From the results of the validator, it is illustrated that the media developed is feasible and can be used in the learning process on Indonesian history subjects.
3. The practicality of M2BA media can be concluded from the trial phase by conducting practicality tests on six

history subject teachers and students as test users, all of which are in the practical category.

4. The effectiveness test was carried out by independent sample t-test analysis by analyzing the results of the control class posttest and experimental class posttest, so the value of Sig. (2-tailed) = 0.000 < 0.05 so it can be concluded that the hypothesis  $H_a$  is accepted and  $H_o$  is rejected. In other words, there is an effect of using M2BA media on efforts to improve students' chronological thinking skills in learning Indonesian history in the pre-literacy period.

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