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Hypertext Based E-Module Innovation (*e* -MHP) in Learning Islamic Religious Education

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ABSTRACT

This research began from the inability of textbooks to present the nonlinearity and complexity of Islamic religious education subject material. The purpose of this study is to find out: 1) the design of the teaching and learning process with hypertext-based e-modules; 2) the relationship of hypertext-based e-module innovation to students' cognitive flexibility; 3) the impact of hypertext-based e-module innovation on student learning achievement. The research method used in this study is mixed methods, which combines qualitative and quantitative research to understand the problem. The results of the study show that: 1) the design of the teaching and learning process with hypertext-based e-modules actualizes the actors of the teaching and learning process in an effort to build knowledge together; 2) the design of the teaching and learning process with hypertext-based e-modules increased students' cognitive flexibility by 47.7%; and 3) the design of the teaching and learning process with hypertext-based e-modules has a positive impact on student learning achievement of 0.77 sigma. Various data analyzes show that the design of the teaching and learning process with hypertext-based e-modules has received a positive response so that it can be used as a suitable auxiliary media for teachers and students.

Keywords: *Islamic Religious Education, e-Module, Hypertext*

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INTRODUCTION

The teaching and learning process (PBM) is a discourse phenomenon and becomes complete when it involves teachers, learners, and subject matter. The quality of the teaching and learning process is seen from the internal logic of the interaction between teachers, learners, and subject matter in building shared knowledge (Siregar and Muis, 2012). As a totality, the components of teachers, learners, and subject matter interact together in the teaching and learning process (Herlianti, 2011).

The teaching component plays an important role in selecting and controlling the form of discourse and the chosen learning strategy. The selection of control carried out by the teacher aims to facilitate learners in understanding the subject matter. The learning component constructs knowledge whose construction speed is in accordance with intellectual, cognitive, and social conditions. The subject matter component is a medium for the teaching and learning process to take place. The teacher will organize and present the subject matter, while the learner tries to understand the subject matter.

As a component that represents scientific discipline, subject matter needs to function as an accurate and clear representation and its meaning needs to be aligned with the level of education so that the subject matter is easy to teach (*teachable*) and by teachers and easy to reach (*accessible*) by students (Siregar and Muis, 2012).

To achieve this condition, PBM needs to function as a framework to help the process of building 563knowledge together between teachers, learners, and subject matter in a mutually beneficial interdependent relationship. Thus, the process of building knowledge is not unique to academics but is something that is commonly done by everyone. This logic is important because as stated by diSessa (2004) that knowledge begins as pieces of information that with experience will develop into certain knowledge structures. This process occurs because of the need for flexible knowledge to the diversity of contexts and situations faced. To make the task of building effective, diSessa (2004) sees computers as effective cognitive tools in shortening the experience to build learner knowledge. Considering that teachers and learners are the actors who determine the direction of the teaching and learning process, the flexibility of the process of constructing knowledge also needs to be maintained so that it is in line with the quite diverse and dynamic interaction situations.

Siregar (1995) stated that intellectual skills can generally be distinguished based on their discourse modules, namely: 1) *Informing* , complete presentation of knowledge with students only having to accept it. The equivalent intellectual skills include making descriptions, definitions, and giving examples; 2) *Eliciting,* a more developed presentation method by sorting information through questions. The equivalent intellectual skills include comparing, analyzing; and 3) *Directing* , is a presentation method that includes students as assessors or gives approval or decisions based on information that has been previously presented. The equivalent intellectual skills include developing explanations and solving problems.

Spiro (1991) more explicitly emphasized the inadequacy of learning theory in dealing with subject matter and argued that: *"there is a common basis for the failure of many instructional systems. The claim to that these deficiencies in the outcomes of learning are strongly influenced by underlying biases and assumptions in the design of learning which represents the instructional domain and its associated performance demands in an unrealistically simplified and well-structured manner".*

According to him, the failure stems from the condition of complexity and irregularity of the knowledge structure which some experts try to overcome by simplifying it, but this effort is less realistic because it applies an uncomplicated assumption to the knowledge structure. This simplification has a double impact in the form of the inability to apply knowledge in different contexts in exploring and developing knowledge more independently and it is recommended to use hypertext media because it is able to balance the complexity of knowledge.

Hypertext is a text that is made non-linear where the parts are connected as a network (Kurzon in Siregar, 2012). The hypertext used in this study is a document in the form of *Hyper Text Markup Language* (HTML), which is a text document that has a special *markup* or sign to indicate that a text, word or sentence in the document has certain attributes.

Jonassen (1988) added that hypertext is a computer facility that allows text and graphics to be accessed in a sequence that is completely controlled by the user. Hypertext can create many branching alternatives that allow users to move freely from one point to another.

Landow in Duffy and Cunningham (1988) stated that hypertext can be used to motivate students to view text from a new angle, in an effort to improve multi-directional thinking. Hypertext-based e-module teaching materials (*e* -MHP) have several advantages compared to text modules. Text modules are sequential or sequential. This means that there is only one linear rule that determines the order in which the text should be read. Current learning materials greatly limit students when they are going to deepen or enrich their knowledge. Students are bound to have to learn something according to what has been provided in the text module. With a different knowledge base, as well as a different way of thinking, the expected results will be difficult to achieve optimally.

The nature of hypertext is the organization of information that is not as usual, namely non-sequential or non-linear because it is in line with computer processing, namely *random access* so that students do not have to follow a fixed reading sequence. In learning, hypertext-based e-modules have the opportunity to create a learning and teaching process that is centered on learners, harmonious and commensurate with the basic nature of Islamic religious education materials and change linear learning into non-linear. In line with the assumption of Flanders' interaction analysis (1970) in Siregar and Muis (2012) that the greater the portion given to learners, the more likely learning outcomes will also increase.

The intrinsic capacity of hypertext-based e-modules lies in the learner's ability to combine various materials and separate supporting materials into a complete whole. Siregar and Muis (2012) this nature seems to provide an opportunity for learners to first organize information packages according to their needs, then use them for the tasks faced according to their context, by carrying out this process continuously will improve and establish students' cognitive flexibility.

Cognitive flexibility is the ability to present knowledge from different perspectives of cases and concepts, and when needed to construct concepts and cases to understand something or solve a problem. According to the theory of cognitive flexibility, the way students think is greatly influenced by the type of cognitive structure they form themselves when they learn or store and structure their knowledge. Cognitive flexibility requires a flexible learning environment. Information must be presented in a variety of ways, and can be used for a variety of purposes. Flexible instructional methods help students learn the contours and complexities of the material they are studying, and help them work by combining content from several different perspectives.

The theory of cognitive flexibility basically supports all the basic assumptions of constructivism, where hypertext as a tool can provide different and authentic realistic experiences to each individual. Therefore, the use of hypertext-based e-modules in learning is expected to increase students' cognitive flexibility so that it can ultimately improve student learning achievement.

This study attempts to explore the implementation of hypertext-based e-modules because previous studies have not studied in more depth, especially the role

of pedagogy and discourse analysis of e-modules based on macro and micro structural patterns of subject matter. The basic nature of the text module applied in phase F of SMA Negeri 3 Kuningan has not paid more attention to the structure of Islamic religious education knowledge and its characteristics are still linear. The linear learning of the text module needs to be aligned with the non-linear nature of Islamic religious education material knowledge.

Rufman (2005) stated that "Linear learning materials limit students when they are going to deepen or enrich their knowledge". According to him, hypertext is able to combine several media as needed and can provide *links* to other parts that can enrich or deepen students' understanding. Siregar and Muis (2012) stated that by implementing this process continuously, it will improve and establish cognitive flexibility abilities so that it is expected to improve students' learning achievement.

The subjects of the study were students of phase F class XI at SMA Negeri 3 Kuningan because it has a school ethnography that allows the implementation of learning using hypertext-based e-modules. The schools selected are also schools that already have computer laboratory facilities. This is necessary because in accessing or using hypertext, the ability to operate a computer is required.

Based on the description above, this study takes the title "Innovation of Hypertext-Based e-Modules (*e* -MHP) in Islamic Religious Education Learning Phase F of the Independent Curriculum".

RESEARCH METHODS

This study uses *mixed methods* (Creswell & Clark, 2007) which combines qualitative and quantitative research to understand the problem. In general, the study was conducted in two stages. *The first stage* is a qualitative description of the implementation of the teaching and learning process. The aim is an exploratory study to gain a deeper understanding of the design and conceptual model of hypertext-based e-module learning (*e* -MHP) and attempts to map the interaction and structure of knowledge in order to see the task of discourse controllers in constructing knowledge. The second stage is a quantitative study to estimate whether there is an increase in students' learning outcome test scores and cognitive flexibility after using hypertext-based e-modules on the concept of *Islamic Civilization in the Modern Era.*

RESULTS AND DISCUSSION

This research is an exploratory study because it involves a design that is still quite limited, the amount of control over the research process is attempted to be as minimal as possible. Naturalistic conditions *are* research conditions that need to be adhered to so that the workplace conditions *remain* intact *during* the research.

In an effort to optimize the phenomena that can be revealed from this research, the implementation of this research is divided into three stages, as follows:

1. **Phase I: Development of the PAI e-module**

   In the implementation of the first stage of the research, qualitative data was used to develop e-modules in learning the topic of *Islamic Civilization in the Modern Era* and then implemented in the teaching and learning process. In addition, qualitative methods were also used to analyze argumentation skills in problem

solving through the analysis of *Subject Matter Pedagogy* (PMS). This study also used quantitative methods used to measure conceptual understanding, intellectual skills as criteria for cognitive flexibility. Furthermore, testing the effectiveness of *e -MHP was carried out with a pre-test* and *post-test* design .

The source material is obtained from the text module then converted into text, then converted into basic text through refinement as a result of the reduction of propositions arranged into a text representation model in the form of global structure and macro structure. Identifying pedagogical actions, as a source of data for the development of an explanatory representation model. Learning symptoms controlled by internal logic are important to note. In the discourse view, the nature of class interaction is a verbal discourse in showing the implications of the methodology in this study. The main methods used in the design and development of hypertext media learning programs are observation and interview methods. Learning symptoms can be seen in the following activities: a) analysis of text modules (seeing the feasibility of the material hierarchy with macro propositions containing Toulmin's argument structure); b) learning analysis (considering pedagogical actions as the basis for developing *e* -MHP); and c) syllabus analysis (target achievements as the basis for considering the content of *Islamic Civilization in the Modern Era* in the developed learning program).

At this stage, it produces *offline e* -MHP as input for the implementation of the second stage. The source of *e* -MHP material in this first stage is taken from the text module. Then establish a global structure to explain the relationship between pedagogical actions and subject matter so that it meets the criteria of being easily accessible according to student responses.

Global structure of results diversion The text becomes *e* -MHP looks like the following figure 1.1.

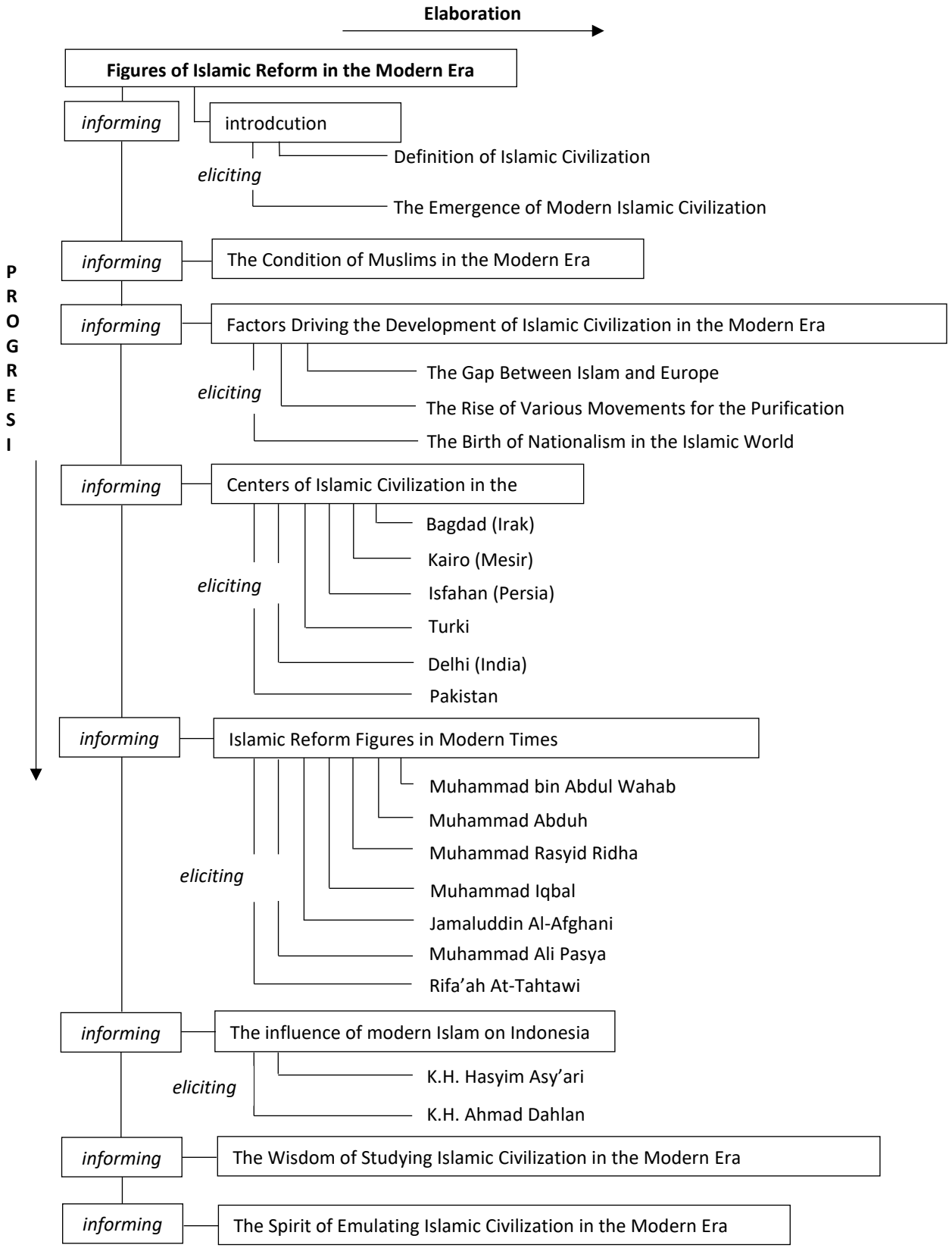

Figure 1
Global Structure of Islamic Civilization in Modern Times

Figure 1.1 shows that during the teaching of *Islamic Civilization in the Modern Era* , the teacher divides the subject matter into three main macros, namely:

1) PI Macro, Introduction
   The introductory macro contains two macro propositions, namely: The birth of Islamic civilization in modern times and Analysis of Islamic thinkers.
2) Macro P II Conditions of Muslims in modern times.
3) Macro P III, Factors that drive the development of Islamic civilization in modern times.
   In this macro, there is a gap between Islam and Europe, the birth of various movements to purify Islamic teachings, and the birth of the idea of nationalism in the Islamic world.
4) Macro P IV, The center of Islamic civilization in modern times
   This macro covers six propositions, namely: Baghdad, Cairo, Isfahan, Türkiye, Delhi, and Pakistan.
5) Makro PV, Islamic Reform Figures in the Modern Era.
   This macro is responsible for seven propositions, namely: Muhammad bin Abdul Wahab, Muhammad Abduh, Muhammad Rasyid Ridha, Muhammad Iqbal, Jamaluddin Al-Afghani, Muhammad Ali Pasha, and Rifa'ah At-Tahtawi.
6) Macro P VI, The influence of modern Islam on Indonesia.
   This macro covers two propositions, namely: KH Hasyim Asy'ari and KH Ahmad Dahlan.
7) Macro P VII, The wisdom of studying Islamic civilization in modern times.
8) Macro P VIII, Behavior that is enthusiastic about emulating Islamic civilization in modern times.

Global structure with the above pedagogical actions as a step in developing a text module into *an e* -MHP. Researchers try to compile *an e* -MHP by providing suggestions in the form of pedagogical actions to avoid disorientation and *cognitive overhead* when navigating. In accordance with the basic characteristics of the module, namely individual teaching, *e* -MHP provides students with the opportunity to access information randomly according to their learning needs as an effort to build knowledge.

2. Stage II: Implementation of Learning

The implementation of PBM with the implementation of *e* -MHP was carried out in three meetings, each meeting lasting 90 minutes. Before the PBM process was carried out, students were given *a pre-test* to determine their initial knowledge, and at the end of the PBM *a post-test* was carried out to determine the score after learning activities with *e* -MHP. In the comparison class, namely class XI.1, PBM activities used text modules, while in the trial class, namely class XI.2, PBM activities used *e* -MHP with computer facilities. The implementation of PBM in the comparison class and trial class was guided by each previously prepared

Learning Implementation Plan (RPP). The assessment of cognitive flexibility and the calculation of *pre-test* and *post-test scores* were limited to the trial class.

The implementation of PBM in the classroom takes place according to the daily activities of the learning process. The implementation of *e* -MHP is an alternative to the use of *MS Office PowerPoint* which is commonly used, because SMA Negeri 3 Kuningan has a computer laboratory so it is not an intervention that can threaten the daily conditions of the implementation of learning. Learning with *e* -MHP on the topic of *Islamic Civilization in the Modern Era* is carried out in one meeting.

A more detailed description of the implementation of PBM is as follows:

1) Introduction, starting with a 15-minute *pre-test . Learning on the topic of Islamic Civilization in Modern Times* begins by explaining the implementation of *e*- MHP for 5 minutes limited to the global structure and macro structure briefly but comprehensively.
2) Core Activities, students carry out independent learning activities using *e* -MHP for 40 minutes and the teacher is tasked with guiding them so that there is no disorientation and *cognitive overhead* in navigating the subject matter with *e* -MHP. The core activities are continued with discussions and questions and answers for 40 minutes.
3) Closing, evaluation of learning outcomes with *post-test* and filling out questionnaires in the form of student cognitive flexibility questionnaires as the last activity of the research implementation for 15 minutes. The *post-test results* were then analyzed to determine the effect of *e -MHP implementation on student learning achievement by comparing the mean* score between the comparison class and the trial class. While the score of the questionnaire results as supporting data for the descriptive analysis of student cognitive flexibility that has been carried out in PBM. Learning activities ended with reflection and assignments for 5 minutes.

3. Stage III: Data Processing

This study uses *mixed methods* , resulting in two data, as follows:

1) Qualitative Data

Qualitative data in the form of recordings of classroom discourse to capture the interaction between teachers, learners, and subject matter. Siregar (1998) stated that "the potential of recorded data produces complete analysis so as to provide an analytical perspective on the problem to be studied. The meaning of the recording results is in the form of identifying events with certain labels, including being able to sort the recording results into *informing, eliciting,* and *directing activities* globally to then be detailed into more real verbal actions. The nature of the recorded data is the same as implicative data, namely the results of interpretation that need to be controlled in order to continue to meet the criteria of validity.

The discourse analysis approach provides convenience because it is an important aspect of knowledge construction. Discourse analysis is used to assess the quality of subject matter and provide an overview of whether the subject

matter meets the criteria for student responses that are easy to teach and easy to access by students. In addition, discourse analysis can be used to reveal the strength of internal logic that occurs during teacher teaching and when students are learning. Descriptions of the interactions of the PBM components are analyzed to determine the increase in students' cognitive flexibility during learning activities using *e* -MHP referring to the operational criteria for students' cognitive flexibility.

2) Quantitative Data

There are two quantitative data, namely: the results of the questionnaire to find out more deeply the effect of *e* -MHP on increasing cognitive flexibility, and *the pre-test* and *post-test score values* to find out the increase in student learning outcomes based on the difference in *the mean* scores of *the pre-test* and *post-test* . This study is descriptive qualitative, so the quantitative data obtained are not analyzed further using certain statistics as in standard research. Simple statistical calculations as supporting data for the study because the results of this study are not intended as an effort to confirm a discovery or confirmatory research and are not to be generalized. This is because this study is a classroom study that emphasizes the aim of revealing more deeply the discourse phenomena that occur during the PBM process in the classroom.

Description of the Teaching and Learning Process

In this section, the teaching and learning process using *e* -MHP is analyzed based on the macro structure that has been created. The researcher conducted an analysis of the stages of the learning process starting with the introduction, core activities and closing activities as planned in the teaching module.

In analyzing the learning steps based on macro structure, researchers see the development of student responses according to easily accessible criteria by paying attention to the teacher's pedagogical actions and developing intellectual skills. These criteria include *intelligible* (understood as a procedure), *plausible* (understood because of the relationship with direct experience in PBM), *fruitfull* (understood because it can be used indirectly in the form of questions). PBM activities that result in increased cognitive flexibility of students are analyzed based on the underlying intellectual skills into *informing, eliciting* and *directing.*

As for the implementation of PBM with the implementation of *e* -MHP in accordance with the teaching module, learning activities are carried out through three stages, namely: introduction, core activities, and closing then ending with reflection activities. The detailed description of PBM is as follows:

a. Introduction

In this preliminary stage, the teacher begins to align students' perceptions about the material to be discussed, the learning design that will be used through a series of question and answer methods. The results of recording class discourse interactions are transcribed and then analyzed to obtain basic text. The discourse analysis process is carried out through several stages, as follows:

1) Basic text creation

The basic text is obtained from refining the transcript of the recording of the teaching and learning process on the topic of *Islamic Civilization in the Modern Era*. Refining is done by deleting or inserting words, sentences or phrases. Deletion is done to remove words that have the same meaning as the previous word. Sentences or words resulting from transcription from the PBM process still contain repeated or excessive sentences so that it is possible that they are difficult to understand. The deleted parts are put in brackets. Insertion of words/sentences/phrases is done so that the proposition becomes sharper without deviating from the previous sentence reference.

A snippet of teacher and student interactions that illustrate the teacher's teaching strategies can be seen in Table 1, as follows:

Table 1 Refining the original introductory text into basic text

Original Text	Basic Text
Teacher: " *Assalaamu'alaikum warahmatullaahi wa barakaatuh"*	1. *Assalaamu'alaikum warahmatullaahi wa barakaatuh*
Student: *"Wa'alaikum salaam warahmatullaahi wa barakaatuh"*	2. *"Wa'alaikum salaam warahmatullaahi wa barakaatuh"*
Teacher: "How are you all today?"	3. How are you guys today?
Student: " *Alhamdulillah* , okay sir"	
Teacher: "Okay, our meeting today will discuss *Islamic Civilization in Modern Times."*	4. *Alhamdulillah* , fine sir. 5. Our meeting today will discuss *Islamic Civilization in Modern Times."*
Teacher: "Next, what do you know about Islamic civilization? "	6. What do you know about Islamic civilization?
Student: "Islamic civilization is a statement related to the growth and development of Islamic civilization from time to time, sir."	7. Islamic civilization is an explanation of the growth and development of Islamic civilization from one time to another, sir.
Teacher: "Next, try to mention, when was the birth of modern Islamic civilization?"	
Student: "Around the 18th century, sir"	8. When was modern Islamic civilization born?
Teacher: "Yes , all right, students, next we will discuss further the sub-topics of Islamic civilization in modern times."	9. 18th century 10. Next, we will discuss the sub-topics of Islamic civilization in modern times.

2) Derivation of propositions from basic texts

Proposition is a basic concept or main idea of the truth value of an utterance. Generally shorter than an utterance. The resulting proposition can be further separated into micro propositions and macro propositions. The reduction of basic text into propositions is realized through macro rules (Dijk and Kentsel, 1985) in Siregar (1998), namely: 1) deletion, the existence of propositions that are not needed in interpreting a particular text can be deleted; 2) generalization, from a particular proposition another proposition can be derived through generalization as its reference; and 3) construction, gradually from several propositions a new proposition can be constructed.

An example of a proposition derivation excerpt by adding pedagogical actions is the stages of the learning process using *e* -MHP, shown in Table 2, as follows:

Table 2 Example of Introductory Proposition Derivation

Pedagogical Action	Basic Text	Micro Proposition	Macro Proposition-3	Macro Proposition-2	Macro Proposition-1
1	*2*	*3*	*4*	*5*	*6*
Eliciting	1. *Assalaamu'alaikum warahmatullaahi wa barakaatuh* 2. *"Wa'alaikum salaam warahmatullaahi wa barakaatuh"* 3. How are you guys today? 4. Alhamdulillah, fine sir. 5. Our meeting today will discuss Islamic Civilization in Modern Times." 6. What do you know about Islamic civilization? 7. Islamic civilization is an explanation of the growth and development of Islamic civilization from one time to another, sir. 8. When was modern Islamic civilization born? 9. Next, we will discuss the sub-topics of Islamic civilization in modern times.	Islamic civilization is an explanation of the growth and development of Islamic civilization from one time to another. 18th century	Understanding Islamic civilization The birth of Islamic civilization in modern times	Islamic civilization in modern times	Introduction

3) Global Structure

According to Siregar (1998) that the global structure is arranged by considering the integration of relationships between units, namely by returning macro actions in the progression dimension to have a flow to be more continuous, while the subject matter in the elaboration dimension requires the integrity of the hierarchy between subject matter units. Determining the global structure is an important finding to explain the relationship between pedagogical actions and subject matter and the criteria for easy access according to student responses. The global structure of learning

the topic of *Islamic Civilization in the Modern Era* based on the results of the derivation of its propositions is shown in Figure 2, as follows:

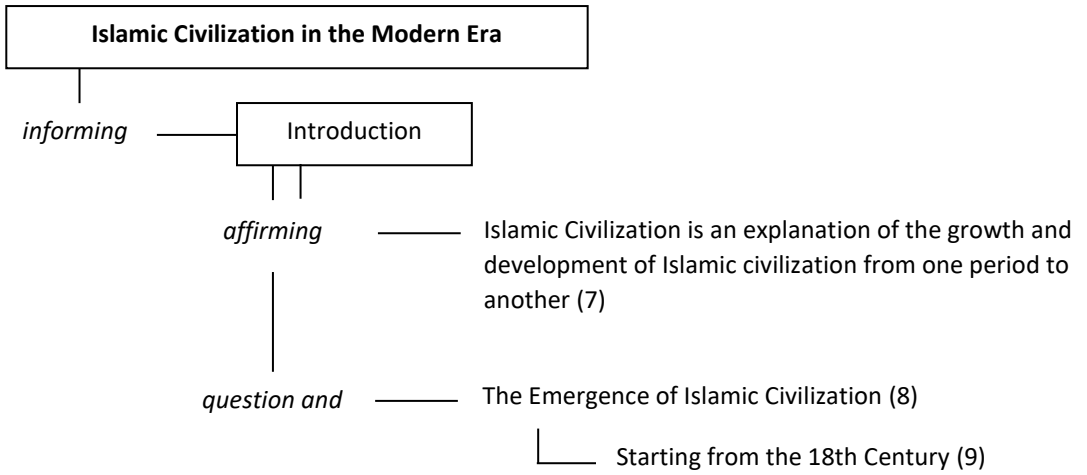

Figure 2. Global Structure of the Results of the Derivation of the Introductory Proposition

Figure 2. Shows that the progression dimension accommodates the implementation of teacher pedagogical actions during PBM and the elaboration dimension accommodates the development of subject matter. In the discourse, the teacher provides affirmation and conducts questions and answers to help students conclude the subject matter so that it is easier to reach according to student responses, as presented in the discourse, as follows:

Mahrun, J.'s (2000) research on discourse analysis is able to reveal the internal logic and totality of interactions that occur between teachers and students in building knowledge. Examples of teacher actions in the form of *eliciting* synergize with *plausible student action motives* .

Teacher's Pedagogical Actions	Kriteria mudah dijangkau menurut respon siswa
Islamic Civilization is an → Menggali pengetahuan siswa dari kenyataan kehidupan sehari-hari.	Islamic Civilization is an explanation → *Plausible*
6. Definition of Islamic Civilization	7. Islamic Civilization is an explanation of the growth and development of Islamic civilization from one period to another
8. When Did modern Islamic Civilization	9. Starting from the 18th Century

Good macro presentation of the sub-concept of *Islamic Civilization in the Modern Era begins by eliciting* information on students' personal experiences from their knowledge in everyday life. Then a deeper investigation into the requirements for good food with pedagogical actions asking "what are the requirements for good food?" and efforts to confirm the confirmation of students' answers "right, what else?" so that the answers become more complete and easily recognized because they are in accordance with the knowledge possessed by students (*plausible*).

b. Core activities

Core activities, students carry out learning activities with *e* -MHP Although they still seem confused about learning with *e* -MHP, they try to explore by starting to experiment and continue to explore the material in more depth as a form of their curiosity about solving the problems given. After students have finished learning using *e* -MHP, it is continued with discussion activities aimed at solving problems in the form of questions at the beginning of learning. The refinement of the results of the discourse transcription into basic text can be described in table 3, as follows:

Table 3. Refinement of the Original Core Activity Text into Basic Text

Original Text	Basic Text
Teacher: "Okay, now let's continue, if there is anything you don't understand, do you have any questions?"	11. **Teacher:** "Okay, if there is anything you don't understand, please ask?"
Student: "Sir, may I ask a question?"	12. **Student:** "Sir, may I ask a question?"
Teacher: "Please"	13. **Teacher:** "Please"
Student: "How is the condition of Muslims in modern times, sir?"	14. **Student:** "What is the condition of Muslims in modern times?"
Teacher: "Yes, that's a good question, if anyone wants to try to answer, please do?"	15. **Teacher:** "Yes, that is a good question, please try to answer it."
Student: "Yes sir"	16. **Student:** "I am, sir"
Teacher: "Yes, please"	17. **Teacher:** "Yes, please"
Student: "Eee… the condition of Muslims at the beginning of the modern period was under colonial control, sir. Well, at that time, Europe experienced rapid progress in the fields of science and technology, such as steam engines, printing tools, then technology in the fields of education, military, and also in the field of shipping, sir."	18. **Student:** "In my opinion, the condition of Muslims in the early modern period was under colonial control. At that time, Europe experienced rapid progress in science and technology, such as steam engines, printing tools, technology in education, military, and shipping."
Teacher: "Okay, your answer is amazing, oh yeah, then what are the factors that drive the development of Islamic civilization in modern times? Please try to answer."	19. **Teacher:** "Okay, the answer is amazing, then what are the factors that drive the development of Islamic civilization in modern times? Please try to answer."
Student "I am sir"	20. **Student** "I am sir"
Teacher: "Please"	21. **Teacher:** "Please"
Student: "Thank you, I would like to answer the previous question, sir. The factors are: there is a gap between Islam and Europe, the	22. **Student:** "Thank you, may I answer, sir. These factors include: the gap between Islam and Europe, the birth of various

birth of various movements to purify Islamic teachings, then the birth of the idea of nationalism in the Islamic world." **Teacher:** Okay, your answer is amazing, if there is anything else you want to ask, please go ahead." **Student:** "May I ask, sir, where are the places that became centers of Islamic civilization in modern times, sir?" **Teacher:** "Okay, please, who can answer your friend's question?" **Student** "I, I sir" **Teacher:** "Please" **Student:** "May I answer, Baghdad and Cairo, sir?" **Teacher:** "Is it only Baghdad and Cairo?" **Student:** "I don't think so sir, there are Isfahan, Turkey, Delhi, and Pakistan, sir." **Teacher:** "Okay, your answer is amazing, son." So do you know the figures of Islamic reform in modern times?" **Student** "May I answer, sir?" **Teacher:** "Please" **Student:** "Excuse me, sir, there are Muhammad bin Abdul Wahab, Muhammad Abduh, Muhammad Rasyid Ridha, Muhammad Iqbal, eh who else, sir, I forgot…" **Teacher:** "Please, for those of you who want to add? " **Student:** "Excuse me, sir, there are Jamaluddin Al-Afghani, Muhammad Ali Pasha, and Rifa'ah At-Tahtawi, sir." **Teacher:** "Are there any Indonesian scholars who have advanced Islamic civilization in modern times?" **Student** "May I answer, sir?" **Teacher:** "Please, son." **Student:** "Excuse me, sir, there is KH Hasyim Asy'ari, then KH Ahmad Dahlan, sir." **Teacher:** "Okay, son, next, what is the wisdom of studying Islamic civilization in modern times?" **Student** "May I answer, sir?" **Teacher:** "Please, son." **Student:** "May I answer, sir? Firstly, encourage Muslims to seek solutions to problems that are in accordance with the	movements to purify Islamic teachings, and the birth of the idea of nationalism in the Islamic world." 23. **Teacher:** Okay, the answer is great, please, if anyone wants to ask any more questions?" 24. **Student:** "May I ask, sir, where are the places that have become centers of Islamic civilization in modern times?" 25. **Teacher:** "Okay, please answer those who can." 26. **Student** "I am sir" 27. **Teacher:** "Please" 28. **Student:** "Permission to answer, Baghdad and Cairo" 29. **Teacher:** "Is it only Baghdad and Cairo?" 30. **Student:** "I don't think so sir, there are Isfahan, Turkey, Delhi, and Pakistan, sir." 31. **Teacher:** "Okay, that's an excellent answer. Then, who are the figures of Islamic renewal in modern times?" 32. **Student** "I, may I answer, sir?" 33. **Teacher:** "Please" 34. **Student:** "May I answer, sir, Muhammad bin Abdul Wahab, Muhammad Abduh, Muhammad Rasyid Ridha, Muhammad Iqbal, …" 35. **Teacher:** "Please, anyone who wants to add something." 36. **Student:** "Excuse me, sir. Jamaluddin Al-Afghani, Muhammad Ali Pasha, and Rifa'ah At-Tahtawi." 37. **Teacher:** "Who are the scholars who played a role in advancing Islamic civilization in modern times in Indonesia?" 38. **Student** "May I answer, sir?" 39. **Teacher:** "Please" 40. **Student:** "May I answer, sir, KH Hasyim Asy'ari and KH Ahmad Dahlan" 41. **Teacher:** "Okay, what is the wisdom of studying Islamic civilization in modern times?" 42. **Student** "May I answer, sir?" 43. **Teacher:** "Please" 44. **Student:** "May I answer, sir? *First* , encourage Muslims to seek solutions to problems according to the demands of

demands of the times, and then achieve genuine progress by adhering firmly to the Qur'an and Hadith." **Teacher:** "Yes, that's right, does anyone of you want to add anything?" **Students:** "Becoming a human being who is useful to others" **Teacher:** "Very good answer, what is the spirit of emulating Islamic civilization in modern times?" **Student** "May I answer, sir?" **Teacher:** "Please, son." **Student:** "May I answer, sir, uh… for the behavior that will be demonstrated, namely: actively reading and seeking knowledge, sir, getting used to conducting self-evaluation, then being optimistic, working earnestly, and practicing the knowledge that is possessed perfectly." **Teacher:** "Okay, your answer is amazing, son. Next, what is the conclusion of the topic we are studying together?" **Student** "May I answer, sir?" **Teacher:** "Please, son." **Student:** "May I answer, sir, uh… as a manifestation of the spirit of Muslims in studying the development of Islamic civilization in the modern era, there is a change in behavior to become better, more optimistic, and of course professional Muslims, and to practice the knowledge they have perfectly, sir." **Teacher:** "Okay, thank you for your answer."	the times; *second* , achieve true progress by adhering firmly to the Qur'an and Hadith." 45. **Teacher:** "Yes, that's right, does anyone have anything to add?" 46. **Students:** "Becoming a human being who is useful to others" 47. **Teacher:** "Very good answer, how is the behavior of the spirit of emulating Islamic civilization in modern times?" 48. **Student** "May I answer, sir?" 49. **Teacher:** "Please" 50. **Student:** "May I answer, sir? The behaviors demonstrated are: actively reading and seeking knowledge, getting used to conducting self-evaluation, being optimistic, working hard, and practicing knowledge perfectly." 51. **Teacher:** "Okay, the answer is great, then what is the conclusion of the topic we have studied today?" 52. **Student** "May I answer, sir?" 53. **Teacher:** "Please" 54. **Student:** "May I answer, sir, the manifestation of the spirit of Muslims in studying the development of Islamic civilization in modern times is a change in behavior to become better Muslims, optimistic, professional, and practice the knowledge they have perfectly." 55. **Teacher** "Okay, thank you"

The transcription results above show the forms of interaction between teachers and students. The teacher asks several questions ranging from simple questions to in-depth or more complete questions. In the question and answer process, it is revealed what students already know, which parts of the subject matter are easy or difficult to understand, and the presentation of students' experiences in independent learning with *e* -MHP and thus students are more aware of their abilities, which parts are interesting to them and know the challenges ahead. Therefore, teachers need to pay attention to students as individuals in their development, provide appropriate references according to their abilities and provide direction and control according to the right time and conditions.

Based on table 3 above, it shows the decline of global structure into macro structure. The sub-concept of *Condition of Muslims in modern times* emerged after the interaction between teachers and students (14), while the content of the substance of

Factors that encourage the development of Islamic civilization in modern times , such as: the gap between Islam and Europe, the birth of various movements to purify Islamic teachings, and the birth of the idea of nationalism in the Islamic world emerged after the teacher reviewed, this was done because students already had initial knowledge about the concept whether after they studied it from *e* -MHP or when they were in junior high school/MTs. While for the sub-concept of *the Center of Islamic civilization in modern times* with the question and answer method emerged in the 24th interaction. The teacher tried to direct *students* to find their own concepts, such as the following excerpt from the interaction between the teacher and students.

Problem	:	"What is the condition of Muslims in modern times?"
Direct	:	“Yes, that's a good question, please try to answer it.”
	:	“I am, sir”
	:	"Yes, please"
Explain	:	"In my opinion, the condition of Muslims in the early modern period was under colonial control. At that time, Europe experienced rapid progress in the fields of science and technology, such as steam engines, printing tools, technology in education, military, and shipping"
Problem	:	“Okay, the answer is amazing, then what are the factors that drive the development of Islamic civilization in modern times? Please try to answer.”
	:	"I am sir"
	:	"Please"
Explain	:	"Thank you, may I answer, sir. These factors include: the gap between Islam and Europe, the birth of various movements to purify Islamic teachings, and the birth of the idea of nationalism in the Islamic world."
Confirm	:	Okay, great answer, please if anyone wants to ask more questions?”
Problem	:	"May I ask, sir, where are the places that have become centers of Islamic civilization in modern times?"
	:	"Okay, please answer those who can."
	:	"I am sir"
	:	"Please"
Explain	:	“May I answer, Baghdad and Cairo, sir?”
	:	“Is it just Baghdad and Cairo? ”
	:	"I don't think so sir, there are Isfahan, Türkiye, Delhi and Pakistan, sir"
Confirm	:	“Okay, the answer is extraordinary, then, who are the figures of Islamic renewal in modern times?”
	:	"I, may I answer, sir"
	:	"Please"
Explain	:	“May I answer, sir, Muhammad bin Abdul Wahab, Muhammad Abduh, Muhammad Rasyid Ridha, Muhammad Iqbal, …”
Confirm	:	"Please feel free to add anything"
Explain	:	“Permission to answer, sir. Jamaluddin Al-Afghani, Muhammad Ali Pasha, and Rifa'ah At-Tahtawi”
Problem	:	"Who are the scholars who played a role in advancing Islamic civilization in modern times in Indonesia?"
	:	"May I answer, sir?"
	:	"Please"
Explain	:	"May I answer, sir, KH Hasyim Asy'ari and KH Ahmad Dahlan"

Problem	:	“Well, what is the wisdom of studying Islamic civilization in modern times?”
	:	May I answer, sir?”
	:	"Please"
Explain	:	"Permission to answer sir, *first* , encourage Muslims to find solutions to problems according to the demands of the times; *secondly* , achieving true progress by continuing to adhere to the Qur'an and hadith"
Direct	:	"What is the role in society?"
Confirm	:	"Becoming a human being who is useful to others"
	:	"Yes, right"
Problem	:	"Very good answer, how is the behavior of the spirit of emulating Islamic civilization in modern times?"
	:	"May I answer, sir?"
	:	"Please"
Explain	:	"May I answer, sir, the behavior that is demonstrated is: actively reading and seeking knowledge, getting used to conducting self-evaluation, being optimistic, working hard, and practicing knowledge perfectly."
Direct	:	“Okay, the answer is great, so what is the conclusion of the topic we have studied today?”
	:	"May I answer, sir?"
	:	"Please"
Conclude	:	"May I answer, sir, the manifestation of the spirit of Muslims in studying the development of Islamic civilization in modern times is a change in behavior to become better Muslims, optimistic, professional, and practice the knowledge they have perfectly."
	:	"Okay, thank you"

A snippet of teacher action in the form of *directing* as an effort of teacher pedagogical action in class discourse synergizes with the criteria of *plausible student action motives* , as follows:

Teacher pedagogical actions	Easy to reach criteria according to student responses
Condition of Muslims in modern times	Condition of Muslims in modern times
↳ Directing students to find their own answers to the problems posed	↳ *Plausible*
14. What is the condition of Muslims today?	18. … Europe experienced rapid progress… .
modern times?	
19. …. then what factors drove the development of Islamic civilization in modern times?	22. …. the gap between Islam and Europe, the birth of various movements to purify Islamic teachings, and the birth of the idea of nationalism in the Islamic world”

The presentation of the sub-concepts begins with *directing* , which is the teacher's pedagogical action to direct students to try to find their own answers to the problems raised in the form of classical questions. The teacher as the discourse controller asks several questions, for example : " What is the condition of Muslims in modern times?" then the next question "... then what factors drive the development of Islamic civilization in modern times?", students answer "... Europe has made rapid progress..." and " … the gap between Islam and Europe, the birth of various movements to purify Islamic teachings, and the birth of the idea of nationalism in the Islamic world". It appears that students easily answer these questions. This is because the subject matter they face is easily accessible *and* meets the criteria for student responses to be easily recognized.

c. Core activities

To give students the freedom to explore the material they have learned, the teacher gives assignments in the form of unstructured independent tasks to provide reinforcement or retention of the learning material they have learned. An excerpt of discourse interaction in the closing activity by the teacher, as follows:

Teacher	:	“Next week's assignment, learn about the map of the expansion of the territory of Islamic rule”
Student	:	"Okay sir"
Teacher	:	“(Reflection) After studying the topic of Islamic Civilization in modern times using hypertext-based e-modules, what do you feel?”
Student	:	"The material is concise, clear, and easy to understand, sir."
Teacher	:	"There are more ?"
Student	:	"I feel like I'm studying the material according to what we want"
Teacher	:	“Yes, so we can access the material freely according to what we want in line with the characteristics of *e* -MHP, thank you”
Student	:	"You are welcome, sir"
Teacher	:	*"Assalaamu'alaikum warahmatullaahi wa barakaatuh"*
Student	:	*"Wa'alaikum salaam warahmatullaahi wa barakaatuh"*

The excerpt of the discourse above provides information that the implementation of *e* -MHP provides many conveniences, including: concise and clear, the material becomes easy to understand, and can access the material freely according to student needs. This is in line with the characteristics of e-modules, Nurma (2010) that e-mobil should use simple, straightforward, and communicative language, Syaodih (2009) e-modules provide a more lively atmosphere, attractive appearance, and can also be used to show a certain process more realistically.

Driscoll (2000); Spiro and Jelog (1900); Wilson (1996); Wilson stated that a large number of examples have shown that computer-based learning can facilitate the implementation of conditions for increasing cognitive flexibility, Siregar, et al. (2012) stated that by implementing learning continuously with hypertext learning media will increase cognitive flexibility. Presumably, *e* -MHP developed from text modules provides a more interesting learning atmosphere so that students are motivated to learn independently according to their respective needs as knowledge to solve problems in

everyday life. The implementation of *e* -MHP in PBM in meetings helps teachers effectively create conditions that facilitate learning and stimulate cognitive flexibility in various domains.

Identification of cognitive flexibility based on operational criteria for students' cognitive flexibility in classroom discourse interactions is shown in Table 4 as follows:

Table 4
Identifying Cognitive Flexibility
(Excerpt of Discourse Interaction in PBM)

Learning Conditions		Basic Text Snippet
Criteria	**Elaboration**	
MP1	Systematically explaining new concepts with one's own perspective	In my opinion, the condition of Muslims at the beginning of the modern period was under colonial control. At that time, Europe experienced rapid progress in the fields of science and technology, such as steam engines, printing tools, technology in the fields of education, military, and shipping (18)
MP2	Explore the relationships between concepts in more depth using knowledge structures.	Thank you, may I answer, sir. These factors include: the gap between Islam and Europe, the birth of various movements to purify Islamic teachings, and the birth of the idea of nationalism in the Islamic world (22)
MP3	Expressing personal viewpoints on new concepts	"I don't think so sir, there are Isfahan, Türkiye, Delhi and Pakistan, sir" (30)
MP4	Appreciating the diversity of perspectives on new concepts	- Permit answered sir, *firstly* , encouraging Muslims to find solutions to problems according to the demands of the times; *secondly* , achieving true progress by continuing to adhere to the Qur'an and hadith" (44) - Yes that's right, does anyone have anything to add? (45) - I, sir, am a person who is useful to others (46)
MP5	Accepting different points of view on the topic being discussed	May I answer, sir, the behavior that is demonstrated is: actively reading and seeking knowledge, getting used to carrying out self-evaluation, being optimistic, working hard, and practicing knowledge perfectly (50)
MP6	Solve problems in an agreed manner	May I answer, sir, the manifestation of the enthusiastic attitude of Muslims in studying the development of Islamic civilization in modern times is a change in behavior to become better,

		more optimistic, more professional Muslims, and to practice the knowledge they have perfectly (54)

Source: Modification from Chieu et al. (2004); Chieu (2005)

Table 4 above shows several discourse interactions that meet the operational criteria of cognitive flexibility. The MP2 criteria occur more frequently, namely in the 22nd basic text, when faced with a new concept, students are encouraged to explore the relationship between concepts in more depth using the knowledge structure. This is in line with hypertext processing, namely *random access* so that students do not have to follow a fixed reading order. Students also have the freedom to explore the subject matter being studied. The macro structure as a basis for developing text modules into e-modules with hypertext characteristics can be managed according to the criteria of pedagogical explanation, namely so that advanced knowledge is easy to teach (*teachable*) and easy to reach (*accessible*).

Quantitative Research Results

1. *e -MHP* Implementation and Students' Cognitive Flexibility.

Based on the results of data processing with *IBM SPSS Statistics* version 30.0.0, the measurement results obtained showed that the implementation of *e* -MHP in PBM can increase cognitive flexibility by 47.7%. Table 5 shows the magnitude of the relationship or correlation between the implementation of *e* -MHP and cognitive flexibility, as follows:

Table 5 Correlation of *e* -MHP Implementation with Students' Cognitive Flexibility

		e- MHP	Cognitive Flexibility
e- MHP	Pearson Correlation	1	.477**
	Sig. (2-tailed)		.004
	N	35	35
Cognitive Flexibility	Pearson Correlation	.477**	1
	Sig. (2-tailed)	.004	
	N	35	

** *Correlation is significant at the 0.01 level (2-tailed).*

2. Description of Student Learning Achievement Gain.

Based on the research data, the learning achievement *gain index* of trial class students is in the interval of 0.30-0.77. From the results of data processing, the minimum score (X_{min}), maximum score (X_{max}), average value (X), *gain* and normalized *gain* (g) for the trial group are obtained as presented in table 6, as follows:

Table 6 Average Results of Pre-test and Post-test of Trial Group

Test	X_{ideal}	X_{min}	X_{max}	$X_{average}$	Gains	<g>
Pre-test	100	3.33	7.67	5.50	1.67	0.30
Post-test	100	5.33	9.00	7.17		

Based on table 6, it can be concluded that after implementing *e* -MHP, there was an increase in student learning outcomes as indicated by the average *post-test value* which was greater than *the pre-test.* From the average *pre-test* and *post-test, a gain* of 1.67 and a normalized *gain of 0.30* were obtained . From the normalized *gain* , it can be said that learning using *e* -MHP in an effort to improve student learning achievement is in the moderate category.

3. Mean Data.

Table 7 shows the mean data from the comparison class and trial class on the topic of *Islamic Civilization in Modern Times* . The *mean data is used to determine the post-test* score in the comparison class and the trial class as an indicator of increased student learning achievement after learning with the implementation of *e* -MHP. The summary of scores according to the test and research class is shown in table 7, as follows.

Table 7 Summary of Scores by Test and Research Class

Research Class		**Post test**	**Pre-test**
Comparison Class	Mean	7.10	5.72
	Std. Deviation	0.68	0.87
	% of Total N	50%	50%
	N	35	35
Trial Class	Mean	7.87	5.78
	Std. Deviation	0.98	1.22
	% of Total N	50%	50%
	N	35	35

Source: Siregar (2009)

Based on table 7 above, the mean *post-test score* for the comparison class, the class with text module learning is 7.10 while for the trial class with *e*-MHP implementation it is 7.87. Based on figure 4, overall the increase in student learning achievement as an impact of *e*- MHP implementation is 0.77 sigma.

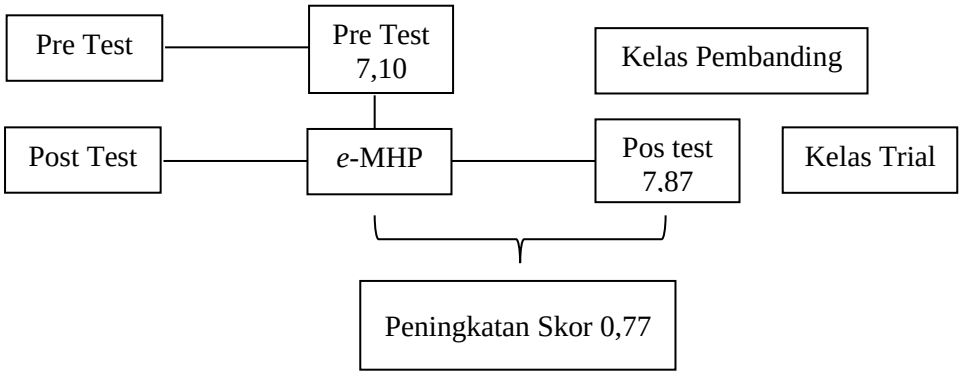

Figure 3 The Relationship between Variables and Research Classes in Determining Increase in Learning Achievement

4. Data Display in Bar Graph Form.

The average results of student learning achievement obtained in this study are depicted in the form of a diagram as in Figure 6, as follows.

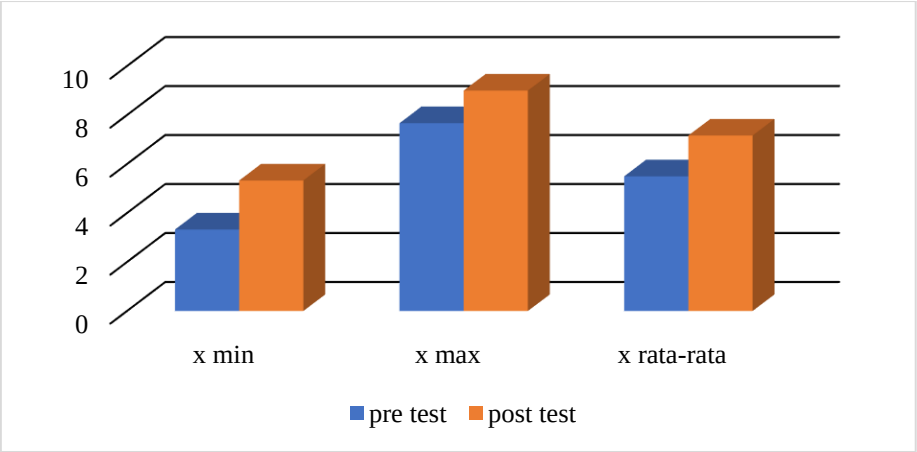

Figure 4 Average Graph of *Pre-test* and *Post-test Results* of Trial Group

For the influence of *e* -MHP implementation in learning, a one-sample mean difference test was used. The minimum learning completion criteria set was 70. The *post-test data* were tested with a one-sample t-test using *IBM SPSS Statistics* version 30.0.0, the results are as follows.

Table 8 Results of the Difference Test of Average *Pre-Test* and *Post-Test* of Trial Class

One Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Pre Test	35	5.7817	1.22359	.20682
Post Test	35	7.8731	.97636	.16504

One Sample Test

	Test Value = 70					
	t	df	Sig. (2-tailed)	Mean Difference	95% Internal Confidence of The Difference	
					Lower	Upper
Pre Test	27,955	34	.000	5.78171	5.3614	6.2020
Post Test	47,706	34	.000	7.87314	7.5378	8.2085

Based on the calculation with a one-sample *t-test* from 34 data, an average of 7.87 was obtained with a standard deviation of 0.98 with a $_{\text{calculated t}}$ of 47.71 with a significance level of 0.00 still below 5%, so that a conclusion was obtained that there was a significant difference between the average *post-test* and the minimum completeness criteria (KKM) set at 70. The average *post-test score* of 7.87 indicates that the *post-test results* exceeded the previously set KKM value.

The success of teaching in improving understanding of the subject matter that is complete and critical is closely related to the efforts of teachers and learners to build

a shared thinking framework. The effort to build this is realized through cognitive interaction of the components of the subject matter, teachers, and learners in the form of dialogue and argumentation activities. in (PBM).

1. PBM-MHP Design

Learning materials that are linear in nature are likely to greatly limit students in deepening the material or enriching their knowledge. Students are bound to have to learn something according to what is provided in textbooks. With a different knowledge base, as well as different ways of thinking, the expected results will be difficult to achieve optimally. Therefore, the preparation of *e* -MHP as an effort to overcome this, is arranged in a certain domain so that students can determine for themselves what they want in PBM. The non-linear nature of hypertext in *e* -MHP requires students to be able to estimate the contents of the information nodes that will be visited, which is a cognitive burden for students. If this estimate is inadequate, students experience disorientation. To overcome this, students need to understand the navigation map, which is displayed together with the content in text form to remain aware of the trajectory and direction of their navigation. The success of users in understanding e-modules with hypertext characteristics depends on how students understand the teacher's mode of action applied to subject matter knowledge. This means that the task of reading hypertext assumes that students have adequate subject matter knowledge.

To obtain more reasonable data, the implementation of e-modules with hypertext characteristics (e-MHP) is attempted as reasonably as possible by keeping the intervention as small as possible. The method is to limit it only to the learning perspective, while the rest takes place as usual. From the explanation above, it can be drawn a picture that the process of building knowledge using e-MHP on the topic of *Islamic Civilization in the Modern Era* involving teachers, learners and subject matter takes place in three forms, namely *informing* (informing motive), *eliciting* (exploring motive) and *directing* (directing motive).

More detailed PBM design with *e* -MHP implementation is presented in Figure 2, as follows:

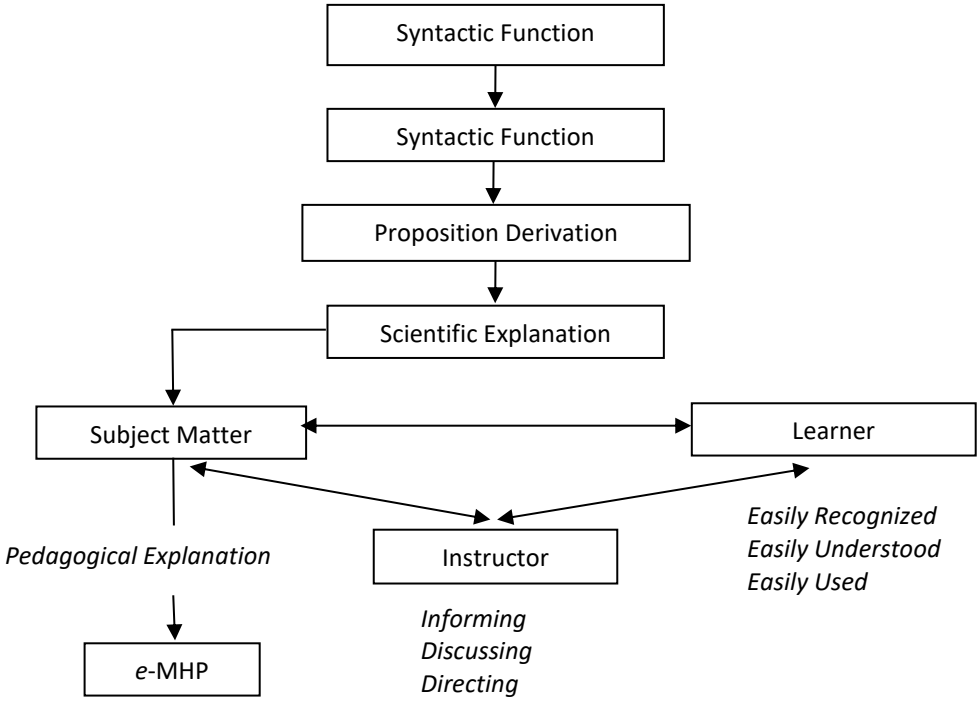

Figure 5.
PBM Design with *e* -MHP Implementation

Figure 4.8 shows the design of PBM with the implementation of *e* -MHP, where teachers need to be supported by knowledge formed by the components of content, substance, and syntax. Content is the element that forms the substance, and syntax is the rule or theory used as the basis for combining content into substance. Syntactic functions operate through intellectual skills that are specific according to scientific disciplines.

Informing is presented to students with guidance so that students are familiar with the content delivered by *e* -MHP. *Eliciting* is presented to students with the selection of subject matter through the development of more detailed material so that it is easy for students to understand. Teachers in developing materials use questions to arouse students' interest and curiosity about the digestive system. *Directing* is presented through *e* -MHP to use existing concepts in working on questions from the topic of *Islamic Civilization in Modern Times* . At this stage, the teacher involves students in research, gives approval and formulates conclusions based on the material they receive. The development of materials at this stage allows teachers to activate students more in PBM.

Subject matter is transformed by teachers through various types of PBM interactions that take place from teacher to student or vice versa from student to student. For this reason, it is required to use various teaching methods that are in accordance with the learning outcomes to be achieved in a meeting. Interaction between students and teachers in building shared knowledge related to *intelligible criteria* (understood as procedures). Teachers use *informing* in the form of providing information to students so that they know the content to be studied. Teachers also use

eliciting with various techniques to obtain information or provide information to students. *Eliciting* is carried out by teachers in the form of selecting subject matter through the development of more detailed material so that the material is easy for students to understand. The role of teachers in building knowledge related to content, substance, and syntax forms interaction patterns that can build student knowledge. The content referred to here is the propositions of the basic text of *Islamic Civilization in the Modern Era,* while the substance of the building of the content that can appear as macro and syntactic structures is the rules of the task of building which is manifested in intellectual skills. In this activity, the teacher uses questioning skills so that the interaction becomes two-way. Students become active in asking questions and at the same time think critically in building their knowledge. Thus, the student's response at that stage can be categorized as high. However, in the internal logic of PMS, this stage actually gives the prerogative to ask questions to students to develop their understanding. The delivery of subject matter when viewed from the interaction is an effort by the teacher to instill concepts in students according to student knowledge. The more abstract the concept contained in the subject matter, the more varied and profound the interactions developed appear.

2. *e -MHP* Implementation and Students' Cognitive Flexibility

Spiro and Jehng (1990) said that cognitive flexibility is one of the important aspects of constructivism. The implementation of *e* -MHP in PBM provides a different atmosphere where students can carry out independent learning activities by navigating randomly according to student needs. The development of text module textbooks into *e* -MHP is an effort to facilitate students to learn with easily accessible materials *so* that learning is more *meaningful* .

Based on the results of data processing using the *IBM SPSS Statistics application* version 30.0.0, the measurement results showed that *e* -MHP can increase cognitive flexibility by 47.7%. The identification results showed that PBM activities using *e* -MHP increased students' cognitive flexibility starting from criteria MP1 to MP6. This is because students have begun to get used to and have intellectual skills in utilizing *e* -MHP as a computer-based learning media. In line with Chieu's findings (2007) that making the design and use of a computer-based learning environment supports cognitive flexibility to be easy and effective. Siregar and Muis (2012) continuous use of hypertext will increase cognitive flexibility.

According to Wilson (1997), evaluating students' cognitive flexibility is very difficult because it is not easy to know what is happening right in the mind of someone who is learning , and it is difficult to find important questions to help students express what is happening to their cognition during the learning process. Therefore, operational criteria for cognitive flexibility can be used to evaluate students' learning conditions.

3. *e -MHP* Implementation on Student Learning Achievement

The implementation of *e* -MHP can improve student learning achievement. This is based on the analysis of the average *pre-test* and *post-test scores* in the trial class, namely the research class that uses *e* -MHP in learning activities on the topic of *Islamic Civilization in the Modern Era. The mean* value is the main value used to determine the

impact of the implementation of *e* -MHP on the comparison class and the trial class of 0.77 sigma. This achievement is quite satisfactory because previous research reported by Waxman Lin and Michko (2003) that the implementation of hypertext media was able to improve the learning outcomes of "students" with scores exceeding 0.41 sigma. While Siregar, et al. (2009) in their research, that the implementation of hypertext media increased to 0.74 sigma. Therefore, in the study of the implementation of *e* -MHP in learning the topic of *Islamic Civilization in the Modern Era* gave better results. This provides an opportunity for further development to determine the significance of the implementation of *e* -MHP in Islamic Religious Education learning and other subjects.

CONCLUSION AND RECOMMENDATION

A. Conclusion

Based on the formulation of the problem that has been stated previously, the results of this study indicate that e-MHP innovation in PAI learning phase F increases cognitive flexibility and student learning achievement. This is based on the analysis of the answers to the research questions, as follows:

1. The success of teaching in improving the understanding of complete and critical subject matter is related to the learning design as an effort by teachers and learners to discuss a shared framework of thinking. The effort to construct is realized through cognitive interaction of the components of teachers, learners, and subject matter in the form of dialogue and argumentation activities from the teaching and learning process.
2. The implementation of *e* -MHP in Islamic Religious Education phase F learning increases cognitive flexibility by 47.7%. The results of the identification of discourse interactions show that Islamic Religious Education phase F learning activities using *e* -MHP meet the criteria MP1 to MP6 in the operational criteria table for cognitive flexibility.
3. The implementation of *e* -MHP in PAI learning phase F showed an increase in student learning achievement of 0.77 sigma.

B. Recommendation

1. The implementation of *e* -MHP in Islamic Religious Education phase F learning supports the improvement of cognitive flexibility and student learning achievement, so Islamic Religious Education teachers should be able to utilize the results of this study as an alternative in efforts to improve the quality of Islamic Religious Education learning.
2. Although the implementation of *e* -MHP in Islamic Religious Education learning is not a requirement, schools should facilitate Islamic Religious Education teachers to develop textbooks as an effort to improve student learning achievement.
3. The results of this study can be used as a reference for the development of further research related to the implementation of *e* -MHP as an effort to improve the quality of Islamic Religious Education learning.

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