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THE DEVELOPMENT OF LEARNING MEDIA "ADOBE ANIMATE" IN HYDROCARBON MATERIAL

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ABSTRACT

Research had been carried out to develop a learning media using ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model with the aims to find out the media feasibility in the hydrocarbon material. This research only carried out three stages of ADDIE model namely up to the development stage. The research samples in the research are lecturers of Universitas Negeri Medan, chemistry teachers of SMAN 7 Medan, and information and technology (IT) experts. The samples become the media validator for this research. There are 3 validators that had validated the media, consist of 1 expert lecturer, 1 chemistry teacher, and 1 IT expert. The results showed that learning media validation results based on BSNP, the average content eligibility is 4.67, language eligibility is 4.67, presentation eligibility is 4.73, graphic eligibility is 4.73, with an average of 4.68; it means that the learning media developed is feasible to use based on the BSNP standard criteria

Keywords*: Research & Development (R&D); ADDIE; Learning Media; Hydrocarbon.*

INTRODUCTION

One of the efforts to develop every aspect of the human personality into a complete human is the goal of education. Waspodo in (Suparman, 2019) said that "National education functions to develop skills, form character, and create a dignified national civilization to educate the nation's life, aiming to develop the potential of students to become human beings who believe Almighty God, have a noble character, healthy, knowledgeable, skilled, creative, independent, and become democratic and accountable citizens". The field of education itself is growing along with the times, one aspect that is developing in the field of education in Indonesia itself is a change in the curriculum which used to be the 2006 KTSP, now schools have implemented the 2013 curriculum. According to Budiani in (Trisyagil et al., 2020), the 2013 curriculum is a curriculum that focuses on a scientific approach enriched by discovery learning.

In chemistry learning, giving experience through the use of process skills and scientific attitudes must be emphasized. Learning must be student-centered. Thus, the students can develop their creativity and skills as mandated in the 2013 curriculum. One of the components that can affect the improvement of students' skills and creativity is teaching materials (Panggabean & Harahap, 2020).

Teaching materials can be developed based on multimedia based on technology. This makes the teachers more enthusiastic and proactive in implementing a learning media in teaching and learning process. Under the times, to achieve the expected learning objectives, a teacher must be able to utilize learning media facilitated by schools, at least utilizing cheaper and more efficient media.

Learning media is a tool that can be used as a means to stimulate feelings, attention, thoughts, abilities, and skills in the learning of students. One of the learning media that can be used is Adobe Animate. Adobe Animate is software that can be used to create animations and become a learning medium. With the use of Adobe Animate learning media, the concepts in chemistry learning will be more concrete and can be simplified through the animation made.

Related research conducted by (Silvia & Bukhori, 2021) shows that with the use of Adobe Animate CC learning media in two classes, namely the experimental class and the control class, there are differences in learning outcomes. From the data that has been loaded with the Minimum Completeness Criteria of 75, the average learning outcomes of the experimental class are 82. While in the control class, the average learning outcomes are 71, and only a few students have scores above the Minimum Completeness Criteria. From the difference in the average learning outcomes, it has been shown that the use of Adobe Animate CC learning media increases the interest and learning outcomes of students.

METHODS

This research conducted at Universitas Negeri Medan and SMAN 7 Medan. This research has been conducted for three months, namely, November 2021 - January 2022. The type of research used in this research is Research and Development (R&D). R&D is used through ADDIE (Analysis, Design, Development, Implementation, and Evaluate).

In this development research, three steps will be carried out, namely initial research step, product development step, and final research step. The three steps are described as follows:

1. Initial Research Step

   In the initial step of this research, two things need to be done, namely determining the research problem and literature study. Determination of research problems aims to determine the problem to be studied by researchers by determining the focus of the problem, explaining the problem, and making problem limitation. The literature study aims to obtain concepts or theoretical foundations in research that is supported by the results of related previous research.

2. Product Development Step

   In this step, the ADDIE development model is used. The stages of the ADDIE model are: analysis, design, development, implementation, and evaluation. This research is limited only to the development stage to determine the media feasibility. (1) Analysis. The things that will be done at the analysis stage in this research are analyzing the main problem based on the problems obtained from the literature study and related previous research and analyze the support learning tools used by the teacher in the teaching and learning process on the hydrocarbon material. (2) Design. The thing that will be done at the design stage in this research is to make a research flow chart. (3) Development. Things that will be done at the development stage in this research, namely development of learning media, making assessment sheets and revision of learning media.

3. Final Research Step

   In the final stage of the research, two things will be done, namely data processing and data analysis. In data processing, the data from the media validation processed and analyzed. In data analysis, the data will go through a process of selecting, simplifying and transforming the results of the research notes. This data analysis will aim to help conclude.

   The research instrument used was a learning media assessment questionnaire that was used to determine the feasibility of the developed media. This questionnaire uses a Likert scale with rating options: 5 = very good, 4 = good, 3 = less good, 2 = not good, and 1 = very not good. Answer scores

in the range 1 – 5 were tabulated and the average score was calculated. Eligibility levels were divided into four groups, with an ideal mean of 2.50 as the eligibility limit score. Therefore, the mean score less than the ideal mean is interpreted in the "not feasible" category, while the mean score in the "appropriate" category is divided into three levels, namely "less feasible", "feasible" and "very feasible", as stated in the following interpretation table:

Table 1. Interpretation

No	Interval Mean Score	Criteria
1	1.00 – 2.49	Not Feasible
2	2.50 – 3.32	Less Feasible
3	3.33 – 4.16	Feasible
4	4.17 – 5.00	Very Feasible

RESULTS AND DISCUSSIONS

A. Initial Research Step

The initial steps taken in this initial research were determination of research problems and then proceed with the literature study. The problem obtained was that there were difficulties for students in learning hydrocarbon material which caused the decrease of students' interest and low student learning outcomes. After determination of research problem, literature study was carried out to obtain concepts or theoretical foundations as well as findings from previous research related to the research. The literature study studied was in the form of books, journals, articles, theses, and browsing from the internet and others.

B. Product Development Step

The ADDIE model is applied in the product development step of learning media of hydrocarbon material. The following is an explanation of each step:

1. Analysis

   In the analysis stage, there were 2 things that had been done, namely analyzing the main problem and analyzing the learning support tool. In analyzing the main problem, it turned out that there were still many students who did not focus on learning chemistry on hydrocarbon material, especially when learning was carried out online. Most students experienced network problems during online learning, which caused a problem, namely the low of students' interest on learning hydrocarbon material. Not only that, it turned out that students' learning outcomes had also decreased. Students still had many difficulties in learning hydrocarbon material in the sub-topic of hydrocarbon compounds nomenclature and their isomers. After further analysis was carried out, namely analyzing the learning support tool, it turned out that what made it difficult for students to understand the sub-topic of hydrocarbon compounds nomenclature and their isomers was the lack of use of the learning support tool. The learning support tool used during online learning was a chemistry book from the library. So, from the results of the analysis, the researcher interested to develop a learning media on hydrocarbon material as a learning support tool that can help students to keep learning anywhere and anytime.

2. Design

   At the design stage, the things that had been done were making the research flow. The design of the media to be developed was also carried out at this stage, such as the layout of the features that will exist in the learning media. After doing this, the design of the instruments was

carried out and the instruments will be used at the implementation stage. The instruments to be used were test instruments and assessment/validation sheets of the developed product.

3. Development

At the development stage of learning media, the things that had been done are as follows:

a. Developing of research products, namely learning media on hydrocarbon materials.
b. Developing of test instruments that will be used at the pretest and posttest steps and instruments assessment/validation of learning media.
c. Carrying out content validation of the test instrument to be used. Test instrument was validated first by the expert.
d. Carrying out trial of test instruments in the field. The trial was carried out on students who were not the research sample. This test is also said as an empirical validation of the test instrument. This test consists of validity, difficulty level, distinguishing power, reliability, and distractor.
e. Carrying out assessment/validation of learning media that had been developed. Assessment was validated by media experts by using learning media validation instruments.
f. Carrying out revision of learning media from the suggestions that had been given by the experts.

C. Final Research Step

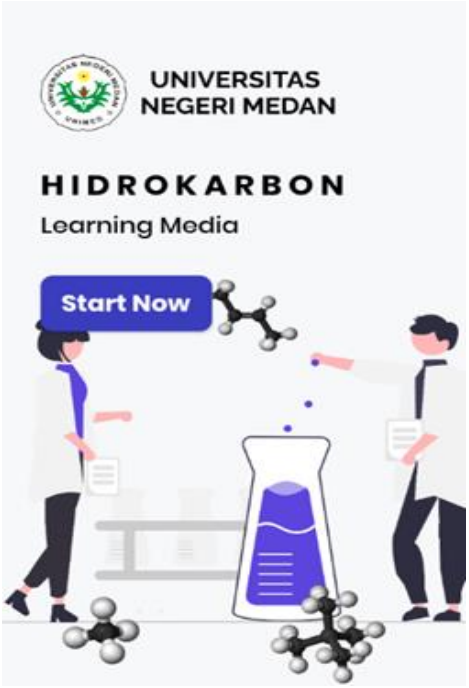
The data that had been collected in the previous stages were then processed and analyzed at this stage. The data obtained was learning media validation data by several media experts. After all the data was processed and analyzed, conclusions can be drawn based on the formulation of the problem.

D. Characterization of Learning Media

After a series of revisions, an application that may be utilized in research is obtained. The following are the components of the media:

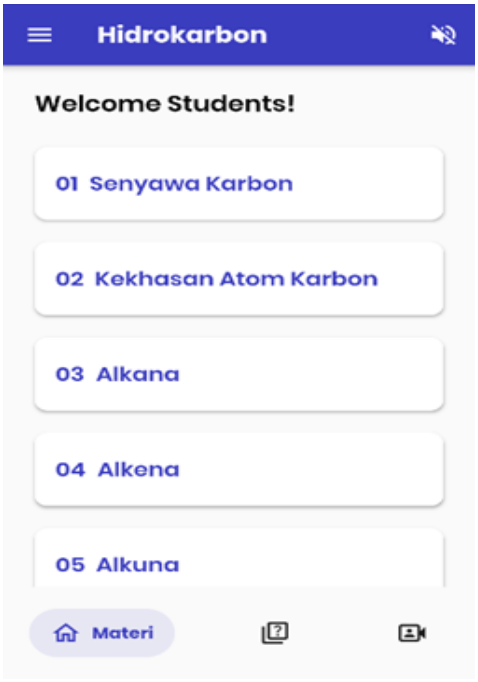
1. Splash Screen

This learning media has an initial appearance as known as splash screen. A splash screen will appear after opening the app. To enter the home screen, click the "start now" button on the splash screen.



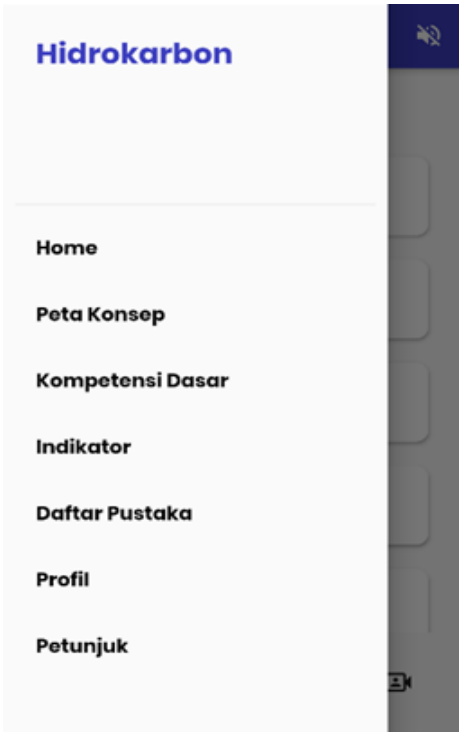
2. Home Screen

The home screen display after entering the learning media consists of 6 material menus, namely carbon compound material, peculiarities of carbon atom material, alkane material, alkene material, alkyne material, and the uses of hydrocarbons material.



3. Navigation Screen

The navigation screen display consists of 7 menu features, namely home, concept map, basic competencies, indicators, references, profile, and instructions.

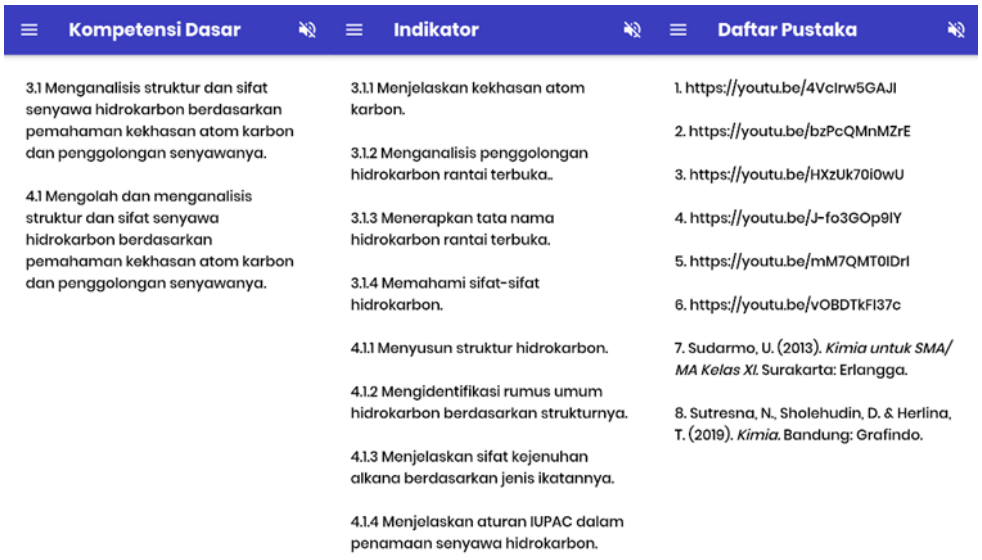


4. Concept Map Screen

In the concept map screen, students will be presented with a concept map as a limitation in studying hydrocarbon material in the use of this learning media.

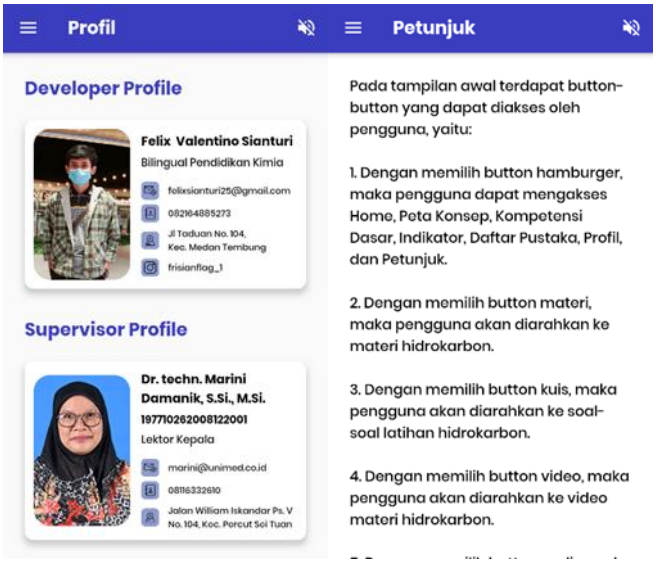
5. Basic Competencies, Indicators, and References Screen

In this basic competencies and indicators screen there is a description of the basic competencies and learning indicators that are closely related to hydrocarbon material so that students know what material is contained in this hydrocarbon learning media. In addition, the references screen contains sources that serve as material and videos for this hydrocarbon learning media.



6. Profile and Instruction Screen

In the profile screen there is a brief identity of the developer of learning media, namely Felix Valentino Sianturi and a brief identity of the thesis supervisor.

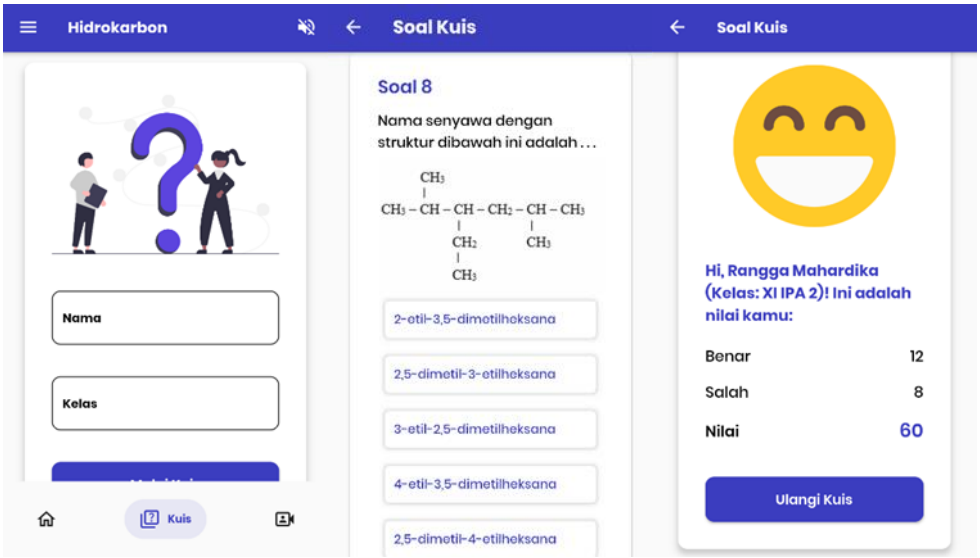


7. Hydrocarbon Materials Screen

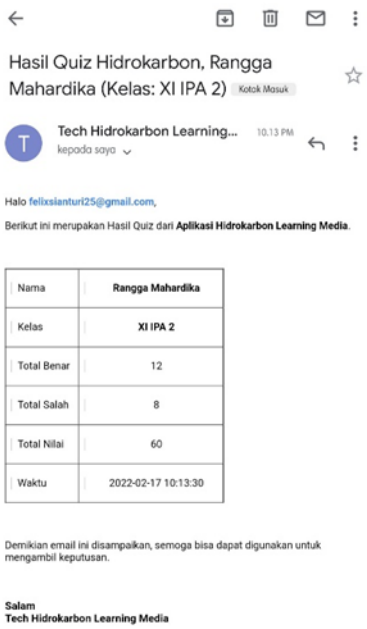
In the hydrocarbon materials screen, all explanations of the materials on the home screen are on this screen. On this screen there is also "Chemical Info / Info Kimia" which contains phenomena that occur in everyday life related to hydrocarbon materials.

8. Quiz Screen

In this quiz screen there are 20 multiple choice questions that can be answered by students. When selecting the quiz menu, students must first fill in their identity, namely name and class to be able to access the quiz. One question consists of 5 options and students must choose the one which they think is the most correct option. After answering all the questions, students will be taken to the quiz result screen and students can find out the number of correct, number of wrong, and the value they get.

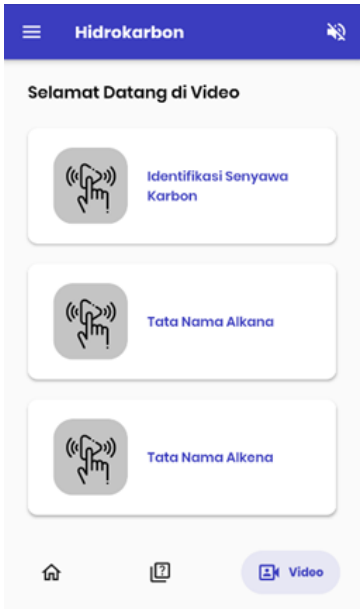


After finishing working on the questions, the scores of students who took the quiz will be sent directly to the researcher via Gmail. Figure 4.9 shows the display of student quiz results sent to the researcher's Gmail.



9. Hydrocarbon Videos Screen

The last screen in this application is the hydrocarbon video screen. On this screen, there are 6 supporting videos that are directly connected to YouTube and this video can make easier for students to learn hydrocarbon material.



E. Eligibility of Learning Media

From the results of the analysis conducted by 3 media validators, namely 1 expert of chemistry lecturer, 1 chemistry teacher of SMAN 7 Medan, 1 information and technology (IT) expert, the feasibility level of learning media is obtained. In summary, media analysis learning can be seen in table below.

Table 2. Eligibility of Learning Media

No	Aspect Criteria	Average	Criteria
1	Content Eligibility	4.67	Very Feasible
2	Language Eligibility	4.67	Very Feasible
3	Presentation Eligibility	4.73	Very Feasible
4	Graphic Eligibility	4.73	Very Feasible
Entirety Learning Media Eligibility		**4.68**	**Very Feasible**

From the table above, it can be seen that the content eligibility aspect has an average of 4.67, the language eligibility aspect has an average of 4.67, the presentation eligibility aspect has an average of 4.73, and the graphic eligibility aspect has an average of 4.73 which overall of the four aspects get very decent criteria with an average value of 4.68. By showing very feasible criteria, then this learning media is "very feasible" to be used as a media for learning chemistry on hydrocarbon material.

CONCLUSION

Based on the results of the research and after conducting data processing and data analysis, conclusions can be drawn, namely the learning media that has been developed in terms of the content eligibility, language eligibility, presentation eligibility and graphic eligibility states that this learning media is said to be very feasible with an average of 4.68.

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