THE DEVELOPMENT APPERCEPTION VIDEO MATERIAL OF THE PERIODICITY OF THE ELEMENT AND THE STABILITY OF THE ELEMENT GRADE X OF SMA/MA

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Abstract

This research aimed to develop and know the quality of apperception video material of the periodicity of the element and the stability of the element for first semester grade X of SMA/MA. The development model used is by adapting the ADDIE model. ADDIE model consist of 5 steps, which are Analyze, Design, Develepment, Inplementasi, and Evaluation. However, in this research did not carry out the implementation phase, so it only did 4 stages. The result of this research are video based apperception that amounted to 4 videos. Based on the reviewer's assessment, the quality of the apperception video material of the periodicity of the element and the stability of the elemens for first semester grade X of SMA/MA was included in the Good category (B) with an ideal percentage of 83.1%.

Keywords: Apperception, ADDIE ,research and development, video

PENDAHULUAN

Education is one of the determinants of the quality of life of a nation. The success of an education will bring success to a nation, otherwise the failure of education will have implications for the failure of a nation. Education is not independent of learning. Learning is the process of interacting students with teachers and learning resources in a learning environment. Learning also has an influence on the quality of education, meaning that learning depends very much on the ability of the teacher to implement and package the learning process (Muchith, 2007). The implementation of the learning process consists of three stages, namely preliminary activities, core activities, and closing activities. The initial activity conducted by the teacher is to open the lesson. The lesson opening activities are intended to condition the motivation and concentration of students so that students have the full readiness to receive lessons from the teacher (Muchith, 2007). Therefore, to make it easier for students to understand and accept new learning material as well as continue their previous lessons, teachers need to increase creativity in making connections when opening lessons. Submission of links is known as apperception.

Apperception helps students more easily understand the lessons given, recall previous lessons and are motivated by the material to be studied. . Based on the research that has been done by Dedy,E. And Sumiaty, E. (2013) that apperception carried out in the early stages of learning is generally considered to be small and sometimes forgotten. However, based on a study found to be very fatal consequences when students are faced with core problems in teaching and learning. Students' inefficiencies in solving problems or in the process of finding concepts turned out to be strongly influenced by immaturity during apperception, which ultimately the ultimate goal of learning was not achieved or not in line with expectations. In addition, in the area of Yogyakarta City 35.71% of teachers who carry out preliminary activities by conveying

apperception before starting the learning process (Nilasari, S.R, 2017). Based on the research that has been done, some teachers have not conveyed apperception or lack in building initial knowledge for students. Therefore the teacher needs to convey apperception when opening learning.

Chemistry subjects are lessons that contain theory or memorization, counts and there are material that combines memorizing and counting abilities. Characteristics of chemistry according to Tresna Sastrawijaya (1988), namely chemistry is more abstract, learns the simplification of true chemistry, chemical learning material starts from the easy to the difficult, and learning chemistry is not just a question. Chemistry lessons require a high understanding, especiallystudents class X. One of the chemical materials in class X is the characterization of elements andstability element. In this material is a basic concept in determining the formation of a chemical compound and knowing the type of bond that exists in the compound. In addition, the personality characteristics of elements also have similar properties between elements with each other and their tendency in the Periodic Table of Elements (TPU). Therefore, the material characterization of elemental elements and element stability requires understanding and reasoning in learning them. Therefore, teacher creativity is needed in connecting chemical material with students' initial knowledge in the initial learning activities, so that the learning process is favored, meaningful for students, and students can more easily understand the material provided.

Today the development of technology is increasingly developing, therefore teachers need to utilize this technology to be used as a learning medium. According to Hamidjojo and Latuheru (in Arsyad, 2011: 4) suggests that media as a form of intermediary used by humans to convey or spread ideas, ideas, or opinions so that the ideas, ideas or opinions that are expressed arrive at the intended recipient. The presence of media in the learning process has significance because the media acts as an intermediary to convey the obscurity of a material. One of the developments of learning media is with audiovisual media. Audiovisual media is a medium that has sound elements and elements of images. Audiovisual media in education must be fun and can be fun for students because these audiovisual devices attract them to read longer without feeling a burden and boredom (Abubakar, Tahir Abdulrahman, et al, 2018).. Audiovisual in the form of video. Video can present information, explain the process, explain complex concepts, teach skills, shorten or extend time, and can influence attitudes (Kustandi, 2011). Learning videos can be made in the form of motion graphics. According to Brinkmann and Bruckner (in Barnes, 2016) that Motion Graphics is a hybrid temporal composition consisting of image layers, typographic housing, graphic elements, sequence images, CGI and direct action recordings. Technically, the function of animation as a mechanism is to produce illusionary movements by producing and displaying the position of artificial graphics without reproducing real movement positions.

One way to connect students' initial knowledge with the concepts to be taught or apperception is to develop a medium. Therefore, it is needed how to develop learning media for

apperception and how the quality of media developed for apperception in chemistry learning.

The purpose of this development research is to develop and to find out the quality of Video Apperception Material Characteristics of Elementary Elements and Stability of Elements of Semester 1 of the Grade X in Senior High School or Madrasah Aliyah. Apperception videos developed include aspects of the appropriateness of apperception, linguistics, performance, video display, and ease of use. This development research can be used as one of the more attractive means of delivering apperception for students in the learning process.

RESEARCH METHODS

Types of research

This study uses development methods. Development research is a research method that aims to produce a particular product and find out the quality of the product produced.

This development research procedure adapts the ADDIE model. In this model there are 5 stages, namely the analysis phase, design phase, development phase, implementation phase, and the evaluation phase (Mulyanta, 2009). However, because this study only aims to test the quality of the products produced and not test their effectiveness, the implementation phase in the ADDIE development procedure is not used.

Subjects and Research Objects

The subject of assessment in this development study is 5 reviewers, namely five high school or chemistry teachers who teach class X. The object of assessment in this development research is the quality of video apperception of chemistry learning in class X semester I.

Research procedure

The research procedure for developing video-based media for the apperception of material chemistry in the material characterization of element and element stability adapts the ADDIE development model. The first stage is the analysis phase. In the analysis phase consists of 3 stages, namely the stage of analyzing the needs and objectives of media users, analyzing the study of the curriculum and Basic Competencies (KD), and analyzing learning objectives. The second stage is the design stage. The next stage of the development stage which contains making video-based apperception media, the last stage is an evaluation. At this stage, the reviewer evaluates. Development procedure schemes can be seen in Figure 1

Data, Instruments, and Data Collection Techniques

The data obtained in this development research is data on product development processes in the form of qualitative data and product quality data in the form of quantitative data.

The instruments used for data collection are questionnaires that refer to the quality of Video Apperception Material Characteristics of Elementary Elements and Stability of Elements of Semester 1 Grade X SMA / MA. This instrument is a closed questionnaire. This research assessment instrument has 5 aspects of assessment and is translated into several criteria. The assessment aspect consists of aspects of the appropriateness of apperception, linguistics,

implementation, video display, and ease of use.

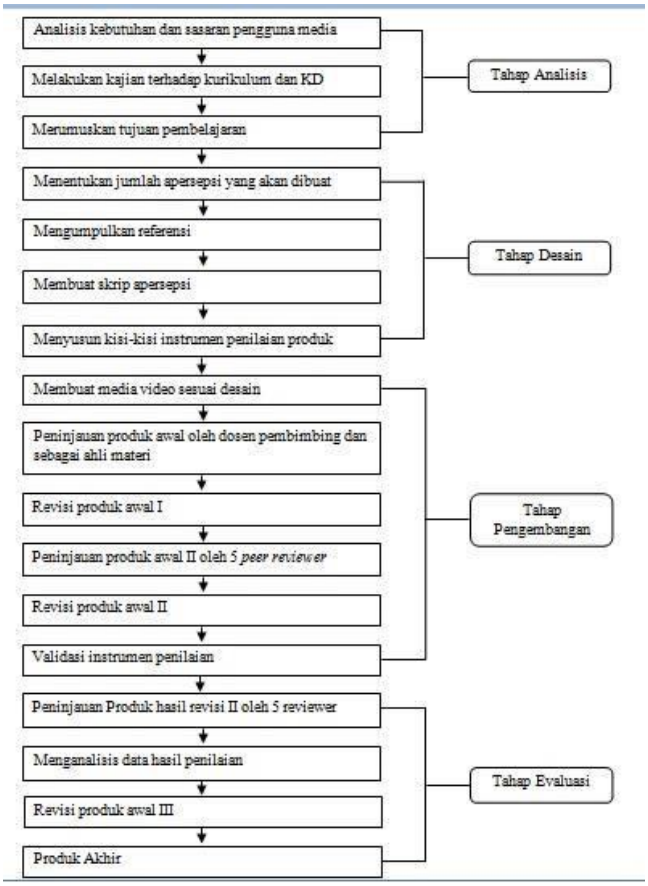

Figure 1. Development Procedure

Scheme **Data Analysis Technique**

The data obtained is the product development process data obtained based on input from material experts, media experts, and 5 peer reviewers who are used as references for improving the product. Product quality data obtained from the reviewers' assessment were 5 high school or chemistry teachers who taught class X. Data from reviewers in the form of qualitative data and criticism or suggestions for improving the product. Qualitative data from reviewers was changed to quantitative data (score). Then calculate the average score for each aspect with the formula:

$$= \frac{\Sigma X}{n}$$

Information :

= average score, n = Number of payments

ΣX = Total score

Further data analysis by changing the average score into qualitative values in accordance with the assessment criteria. The average final score obtained is converted to the level of the feasibility of video-based media for apperception of chemical learning using conversion guidelines as in Table 1 (Widoyoko, 2009).

Tab1e 1. Criteria for the Category of Ideal Assessment

No	Rentang Skor (i)		Kategori
1.	$\overline{X}$		Sangat Baik(SB)
2.	+0,6 Sbi < $\overline{X}$	+1,8 Sbi	Baik (B)
3.	–0,6 Sbi < $\overline{X}$		Cukup (C)
4.	–1,8 Sbi < $\overline{X}$	–0,6 Sbi	Kurang (K)
5.	$\overline{X}$	–1,8 Sbi	Sangat Kurang(SK)

HASIL PENELITIAN DAN PEMBAHASAN

The results of the development research that have been carried out consist of two types of data, namely the data of product development process and product quality assessment data in the form of Video Apperception Material of the Personality of the Element and Element Stability of Class X of Class X SMA / MA. This development product produced four videos of chemistry learning apperception in the form ofanimation motion graphic. Apperception I video for material of Elementary Personality Characteristics (Fingers of Atom and Ionization Energy, video II. Characteristics of Element Crystals (Electron and Electronegativity Affinity), video III Element Stability and Ion Bonding, and IV video of Covalent Bonds.

The first data obtained is data the product development process is in the form of qualitative data, the first product is reviewed to the

supervisor as material expert and media expert, suggestions and / or input from material experts and the media are used as a reference for revising the initial product Revision I on the initial product I will produce product II. II product produced will be reviewed by the five peerreviewers.Suggestions and feedback peer is used as a revision II to produce III.

Data both in the form of assessment of the quality of products by 5 chemistry teacher SMA / MA(reviewer).the instruments used in the assessment in the form of instruments assessment criteria with 6 sub-criteria aspects and 5 criteria aspects

Quality of Sub Aspects Coverage Content Apperception

Sub aspects of coverage of apperception content consist of 3 criteria. The ideal percentage comparison of the apperception content aspect sub-aspects of the four videos can be seen in Figure 2. Based on the assessment of reviewers in this sub-aspect, the highest ideal percentage in apperception video III was 87%. In apperception video III shows that video III with the material stability of the element and the ionic bond is in accordance with the substance of the material contained in the Basic Competency (KD) that applies to the revised 2013 curriculum, and the apperception component in the apperception video is appropriate starting the question until the problem arises and learning topics. The lowest ideal percentage is in video II, which is 84%, this is due to the lack of connection between material and apperception life. However, the quality of apperception video II is still in the range of Good quality (B).

Sub Quality Aspects of Truth and Appropriateness of Apperception This

sub-aspect consists of 3 grading criteria. Based on theassessment *reviewer's*, an ideal percentage can be seen in Figure 2. The results show that the highest ideal percentage in this sub-aspect is in video I of 87%. This shows that video I strongly shows that the video apperception for chemistry learning is not distorted and coherent in the delivery of questions to the emergence of problems and learning topics.

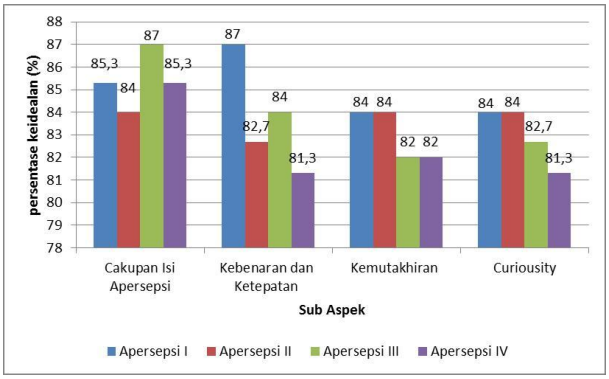

Figure 2. Comparison Diagram of Ideal Percentage of All Sub Aspects in Aspect Feasibility ofContent

ApperceptionThe lowest ideal percentage is in IV video of 81.3% in covalent bond material. This is because in video IV the apersespi question on the covalent bond material is not contextual, so the lowest percentage is obtained. However, video IV is still in the range of Good quality (B) category.

Quality of Sub Aspects of Up-to-date

Sub-aspects of the up-to-date consists of 2 grading criteria. Based on the reviewer's assessment, an ideal percentage can be seen in Figure 2. The results show that the highest ideal percentage in this sub-aspect is found in videos I and II. This shows that the videos I and II of the material characterization of the elements in presenting apperception are innovative, varied, and interesting.

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The lowest ideal percentage is the similarity in videos III and IV. This is due to the lack of maximization in the presentation of apperception that is less innovative in linking or analyzing material. However, apperception videos III and IV based on the latest sub-aspects show Good quality (B) apperception videos.

Quality of Sub Aspect Stimulates Curiosity (Curiousity)

sub-aspect consists of 3 grading criteria. Based on the reviewer's assessment, an ideal percentage can be seen in Figure 2. The results show that the highest ideal percentage in this sub-aspect is similar in videos I and II. This shows that the video I and II material of the personality characteristics of the elements have strongly indicated that apperception video can foster students' curiosity, challenge learning, and attract students to respond to questions in apperception.

The lowest percentage is in video IV with covalent bond material. This is because the IV video is still in linking the material with everyday life so that to attract students' interest is still lacking. However, IV apperception video is still included in Good quality (B).

Quality of Sub Dialogical and Interactive

Aspects This sub-aspect consists of 3 grading criteria. Based on the reviewer's assessment, an ideal percentage can be seen in Figure 3. The results of data analysis show that the highest ideal percentage is in video III. This shows the video apperception of material elemental stability and ionic bonds that the language used in the video is communicative, interactive, and attracts students' interest in learning. The lowest ideal percentage is in IV video with covalent bond material, this is because the language used in Apperception IV video is less communicative, interactive, and attracts students' interest to learn. However, IV apperception video is still in the range of Good (B) quality.

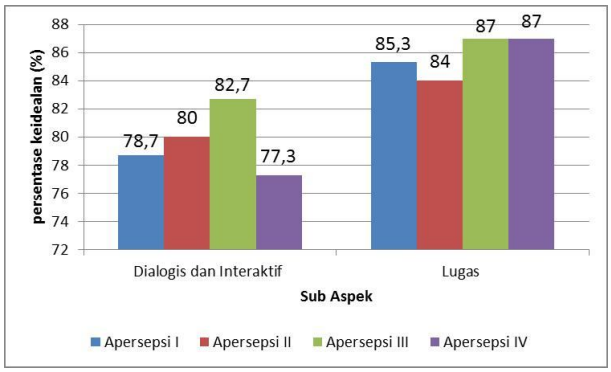

Figure 3. Comparative Diagram of Ideal Percentage of All Sub Aspects inLinguistic

Qualityof Sub-Aspect Lugas

Sub-aspects consist of 4 assessment criteria. Based on theassessment reviewer's, an ideal percentage can be seen in Figure 3. The results show that the highest ideal percentage in this sub-aspect is found in videos III and IV. This shows the apperception video III and IV that the language used in the video is in accordance with the rules and does not cause multiple interpretations so that it is easily understood by students.

The lowest ideal percentage is in the video apperception I with the material characterization of the element (atomic radius and ionization energy). However, the average score of Apperception I video is still included in the Good quality range (B).

Making audio visual or video for learning requires sentences or words that are interesting and easily understood by students. According to Sadiman (2011) that students hear words that are difficult or unknown means that students tend to

lose concentration in listening to lessons, so it is recommended to use everyday language so that it is interesting and easy to understand.

Quality of Aspect Content Apersepsi Feasibility

Contents apersepsi feasibility aspect consists of 11 items, divided into assessment criteria 4 sub aspects, contents coverage apersepsi, correctness and accuracy apersepsi, recency, and stimulates curiosity. Based on theassessment reviewer's, an ideal percentage can be seen in Figure 4.

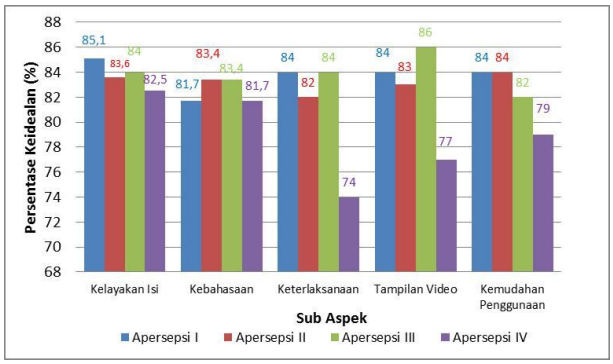

Figure 4. Diagram ideals Percentage (%) Every Aspect Of Kempat Video Based Assessment *Reviewers*

results of data analysis showed that the percentage of the highest ideals on the feasibility aspect of the content is video apersepsi apersepsi I. This indicates that the material in the video apersepsi I is complete in accordance Kompertensi Basic (KD) 3.4 and in accordance with the learning objectives to be achieved. In addition, the material presented was coherent from the easy to the difficult one. The lowest ideal percentage is found in Apperception IV video. The feasibility aspect of the content of the apersesion in video IV has the lowest percentage because the question on apperception video is incomplete. Based on the reviewer's assessment, questions that have not been raised are regarding the configuration of metal and non-metallic elements, as well as their relation to the properties of these elements

Quality of Linguistic Aspects Linguistic

aspects consist of 7 grading criteria which are divided into two sub-aspects, namely dialogical and interactive and straightforward. Based on theassessment *reviewer's*, an ideal percentage can be seen in Figure 4.

The results of data analysis show that the highest ideal percentage in linguistic aspects is apersception video II and III. This shows that the language used in apperception videos II and III is easily understood by students and does not cause multiple interpretations. In addition, the language used is communicative so that interactive interactions can be established. The lowest ideal percentage is in videos I and IV. This caused the material in Apperception IV video to have similarities in the sign of writing the structure of the structure, making it a little confusing for students. However, the quality of the video includes Good (B).

Quality of Aspects Implementation

The implementation aspect consists of 2 assessment criteria. Based on the results of theevaluation *reviewers'* , the ideal percentage of the four videos can be seen in Figure 4.

The results of the data analysis show that the highest ideal percentage in implementation is video apperception I and III. This shows that apperception video media for learning chemistry in videos I and III are in accordance with the learning objectives to be achieved and the video is able to help the effectiveness of learning. The lowest ideal percentage based on the reviewer's assessment is in the Apperception IV video, this is because the apperception in the IV

apperception video is not in accordance with the learning objectives to be achieved. However, overall video quality on aspects of implementation includes Good (B).

Quality of Aspects The video display

The aspect consists of four assessment criteria. Based on the results of the evaluation of 5 reviewers obtained an ideal percentage which can be seen in Figure 4.

Based on the results of the ideal percentage data analysis the highest aspect of video display in apperception video III with material stability and ionic bonding. This shows that apperception video display III in apperception video is appropriate between the composition of the image, text and sound. In addition, the image color clarity and image focus in the video are very good. The lowest lowest percentage percentage is found in Apperception IV video, this is because there are color images that are too bright and the duration of displaying the reaction equation in video IV changes too quickly. However, the average score from the IV apperception video is still in the Good (B) quality score range.

Quality Aspect of Ease of Use

The aspect of apperception video use consists of 4 grading criteria. Based on the results of the evaluation of the 5 reviewers , the ideal percentage of the ease of use aspects of each video is shown in Figure 4.

The results of the data analysis show that the highest ideal percentage is the similarity in apersception videos I and II on the material of Elementary Personality Properties. This shows that the relevance between images / animations in apperception based I and II based media is in accordance with the apperception that will be used in learning. The lowest ideal percentage in the ease of use aspect based on theassessment is reviewer's in the IV apperception video on the covalent bond material, this is because there is less effective text in the video, such as ion bond explanation. But overall apperception videos I to IV are Good (B), so it is easy to operate by the teacher and the relevance of the picture / animation / video with apperception. These results are consistent with several studies, which show that in order to obtain maximum student learning outcomes, images must be closely related to the subject matter, and the size is large enough so that the elements are easily observed simply (Sudjana, 2010: 12).

The results of the overall aspects calculation obtained a maximum score of 140. Based on the results of the reviewer, all aspects obtained an average score for each apersception video I, II, III, and IV respectively, namely 117.4; 116.8; 117.4; and 113.6, so that the ideal percentage for apperception videos I, II, III, and IV were 83.9%, 83.4%, 83.9% and 81.1% respectively. The ideal percentage percentage comparison diagram for each video based on the overall assessment aspect of the reviewer can be seen in Figure 5.

The fourth quality of apperception videos based on the average score included in the Good category (B) and the ideal percentage of the developed apperception video was 83.1%.

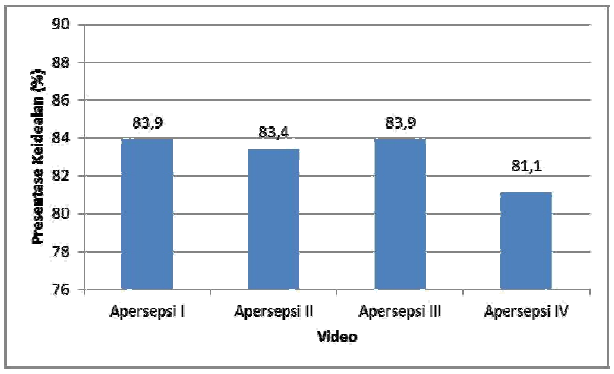

Figure 5. Ideal Percentage Diagram (%) Overall Aspect of the Four Videos Based on the Results of *Reviewers*

This shows that in general the apperception that will be submitted in the form of videos is closely related to the substance of the material contained in the Basic Competencies (KD) that apply to the 2013 curriculum revised on the material The nature of Elementary Personality, Ion Bonds, and Covalent Bonds, there is no concept of aberrant apperception, making it easier for teachers to convey apperception before learning begins, and can provide challenges to students to learn more. This result is in accordance with Hebart's theory, that apperception can generate interest and attention for something (Nasution, 2010: 158). In this case attract the interest of students to respond to apperception and arouse the interest of students to receive lessons in the learning process.

CONCLUSION AND SUGGESTION Conclusion

Based on the discussion of the results of the study, the following conclusions can be drawn:

1. Development of "Video Apperception Material of Classification Material of Element and Stability of Elementary Semester I of Class X SMA / MA" has been successfully developed by adapting the ADDIE development research model.
2. Video Quality Apperception Material of Personality Characteristics of Element and Stability of Elementary Semester I of Class X SMA / MA based on the overall reviewer's assessment is Good (B) with a percentage of 83.1%.

Suggestion

1. Apperception video needs to be tested for students, so that thecan be known effectiveness of video use.
2. Video of the chemistry learning apperception that has been developed and assessed for its quality can be published to the highchemistry teacher school /as an alternative media for submitting non-apperceptions boring.
3. Conduct research on developing video apperception of chemistry learning formaterial different.

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