

# Virtual Video Aid Web-Based E-Learning

Tiur Malasari Siregar, Suci Frisnoiry, Nurhasanah Siregar  
Department of Mathematics  
State University of Medan  
North of Sumatera, Indonesia

**Abstract**— The purpose of this study was to see how the development of E-Learning management assisted by Virtual Video in the learning process in the Mathematics Learning Evaluation course, to find out the obstacles in implementing E-Learning in learning. The research method used is the development research of Borg and Gall which has been modified by Sugiono. The research and development steps in this research are: 1) Potentials and Problems; 2) Data Collection; 3) Product Design; 4) Design validation; 5) Trial Use; 6) Product Revisions; 7) Product Trial; 8) Design Revision 9) Product Revision. The data collection techniques in this study were interviews, observations, and questionnaires. The instrument used to measure the quality of teaching materials was an assessment questionnaire from material and media experts, as well as a student response questionnaire. From the test results, namely by giving the developed product to media experts and material experts, respectively, the scores were 80.3% and 86.7%, which means they were included in the "Very Good" category.

**Keywords-** *Video Virtual, E-Learning.*

## I. INTRODUCTION

In today's global era, education is very important for our students, because education is the foundation or root of national civilization. Education is currently a basic need for everyone, because without education a person will not be able to answer the challenges of life in the future. To obtain an effective and efficient education, now we call it E-learning, this E-learning can make it easier for students and lecturers to carry out learning and learning activities. E-learning is also a part of education, Indonesian education in particular has made use of e-learning as a learning medium. Many educational institutions have created e-learning to support their learning system. e-learning does make the learning process effective, but in practice its use is not as easy as many people imagine and there are many obstacles that occur. Creating e-learning does not require huge funds. Nowadays everyone can make e-learning because there is an open source where everyone can design and create their own e-learning for free. e-learning that was created by many people can be accessed by everyone in this world.

We know that in Indonesia, internet users cannot be counted on fingers anymore. The reality is that Indonesian social network users rank in the top 5. Ranking in the top 5 means that the internet has become a necessity for some people. With these facts, web-based e-learning should be useful in helping improve Indonesian education. This reality seems to be reversed because in the end when an educational institution provides internet facilities to use e-learning, more students open other sites that have nothing to do with e-learning and learning and that is a reality.

The development of education is also accompanied by the development of technology. However, technology is underutilized in supporting education in Indonesia. In fact, one of the government's steps to improve education is to apply technology to education (Purnamasari, 2012). Technology can be used as a means of learning and to complement limitations in learning. The development of technology in the last few years has been very rapid, this is a paradigm that seeking information is not only limited to one media, for example print media, radio and television but also from virtual world sources (internet). One of the most rapid developments is in the field of education. Currently, many are interested in implementing the concept of virtual learning in learning. What is called virtual E-learning. Many parties have developed learning models by making materials that can be studied independently via the internet, LMS, or CD-Rom. The

virtual concept of E-learning offers more promising opportunities for collaboration, connection, access to information, attractive visualization, and encourages the parties involved to be more productive and faster in understanding knowledge. The concept of Virtual E-learning is able to provide several more attractive options if implemented with the right approach (Marie, 2009).

With the current pandemic condition that is currently hitting our society, we also need to address e-learning learning not all students have self-confidence or what we call Self-efficacy (SA). Self-efficacy is the level of a person's belief in himself regarding the ability to do tasks to achieve certain results. Through this research, the researcher also wants to see the relationship between the use of virtual E-learning by using LMS in learning with the confidence that students have, whether students / students in doing virtual e-learning can really understand the learning material provided by the teacher or just the only glimpse of the utilization of technology while the main task of the learning objectives itself is ignored.

The problem that is still widely encountered in the field is that all learning is carried out online using various platforms especially during this pandemic, including in the learning and learning process, What are the obstacles for students in participating in learning, Effective or not they do distance learning and how self-influence their efficacy towards e-learning management.

In 2017, the KDBK research had designed KKNI-based learning tools starting from the RPS to the teaching materials that we use in the learning process in class, based on the reflections that the research carried out continued in the next year 2018 in the same scheme (KDBK) with Developing KKNI-based teaching materials with 6 assignments contained in textbooks with ISBN (9786237019039) through this textbook designed animated PPT in Powtoon media for learning every meeting in the class. Based on the reflection carried out this research also still has many shortcomings, and those deficiencies are fixed again in the next research in 2019 with the same scheme (KDBK) to redevelop previous research through making web / learning applications remembering from the previous 2 years we have all e-learning learning devices that are used for one particular subject, through this web / learning application, lecturers and students can interact directly to get all learning information via the web that has been made, we have uploaded all learning tools and the results of learning reflections and the second edition of textbooks. -2 ISBNs (97862379081).

The application of Virtual E-learning enhances the experience and contribution to education, especially in the mathematics learning evaluation course and facilitates understanding of virtual E-learning for students. In 2020, researchers still want to develop previous research while responding to the current pandemic condition, which is almost a one-minute not being able to meet face to face, students do online learning through UNIMED webex / zoom, but in the implementation of learning we do students still have complaints about the learning , one of which is the difficulty in getting a signal for students who live in rural areas or for areas with difficulty getting a signal, the amount of internet quota needed is also an obstacle in doing online learning. This year the researcher will try to develop this research by adding virtual E-learning as the application of self-efficacy for students. Through virtual E-learning, the researcher will teach for each meeting according to the material listed in the learning contract and then upload the learning application that was made last year. And the plan will be made in 2 years in which the second year of application for large-scale applications (University of Sumatra Utara). Applications that have been made we will continue to administer IPR. And we will test it for a small scale first in 2020.

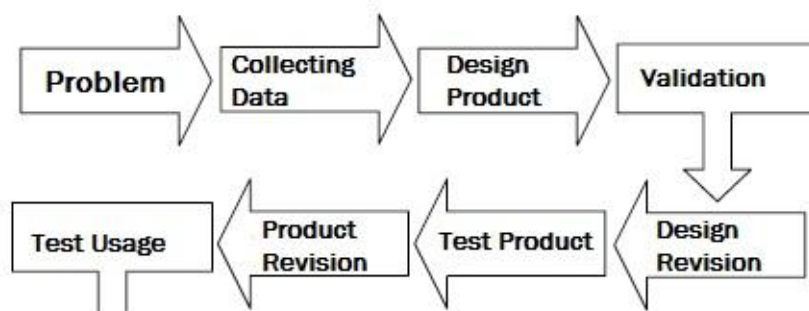
Based on the formulation of the problem and the stated research objectives, this research is a Developmental Research. This research was carried out to produce virtual video-based learning media, which we will apply in e-learning to see the effect of self-efficacy on the e-learning management that we really need in this pandemic condition, where this method is used in creating certain products and is also tested for its effectiveness. UNESCO explained that development research consists of creative work carried out systematically in order to increase the stock of knowledge, including human, cultural and community knowledge and the use of this knowledge stock to design new products or applications.

Development is different from educational research because the purpose of development is to produce a product based on the findings of a series of trials, for example through individuals, small groups, medium groups, and field tests are then carried out, revised and so on to obtain adequate or suitable results or products. This type of research belongs to the type of qualitative research. Research with a qualitative

approach emphasizes the analysis of the process of thinking inductively related to the dynamics of the relationship between observed phenomena, and always uses scientific logic. Qualitative research does not mean without using the support of quantitative data, but emphasizes the depth of formal thinking of the researcher in answering the problems at hand. Qualitative research aims at developing the concept of sensitivity to the problem at hand, explaining the reality related to grounded theory and developing an understanding of one or more of the phenomena at hand. The product referred to in this study is the Virtual Video learning media that can be used in Mathematics Evaluation learning as an alternative to pre-existing media.

## II. RESEARCH METHODS

Suharsimi Arikunto stated that the research method is a way to get the data to be researched. Researchers used the Borg and Gall model reference which Sugiyono had modified, in general this research model can be seen in the Figure below.



Picture 1. Steps for using the Research and Development (R&D) Method

The types of data used in data collection in this study are:

1. Quantitative data taken from giving questionnaires to students who have separate scores.
2. Qualitative data obtained from various criticisms and suggestions regarding the products developed by researchers and also how product trials were carried out.

The data collection techniques used were through interviews, documentation and questionnaires

The data collection instrument used was to interview lecturers and students in order to know which media could be used according to what the students needed. Expert Validation Instruments with validation to Material Experts and Media Experts. The steps used in analyzing data are qualitative data analysis techniques and quantitative data analysis techniques

## III. RESULTS

### 1. Description of Product Development Results

The results of the development of Virtual Video learning media in the Mathematics Evaluation course in the Mathematics Education Department of FMIPA UNIMED in this study are described in the following steps:

#### a. Potentials and Problems

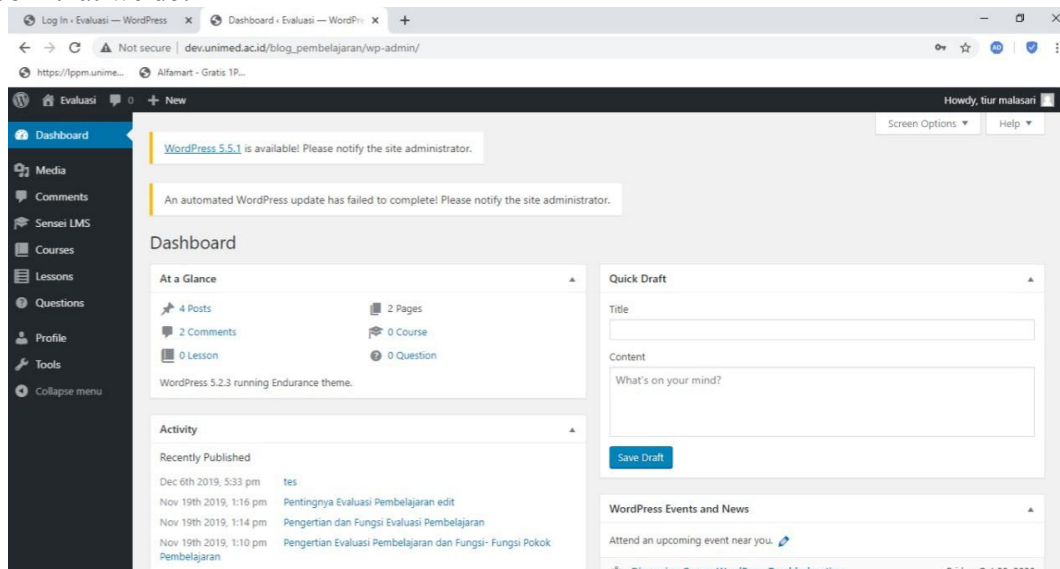
Based on the results of interviews conducted by researchers with lecturers in the Mathematical Evaluation course, it is known that there are fairly basic problems experienced by students in studying Mathematics Evaluation courses, namely: lecturers still have not used media that can replace lecturers to teach that are suitable for the Evaluation course. Mathematics so that students are less able to understand and master the Mathematical Evaluation being studied. The media that is often used is PPT from teaching materials only, but this media cannot replace lecturers to teach learning material in the classroom. In addition, the media is less attractive to students so that students tend to be passive in learning.

#### b. Data collection

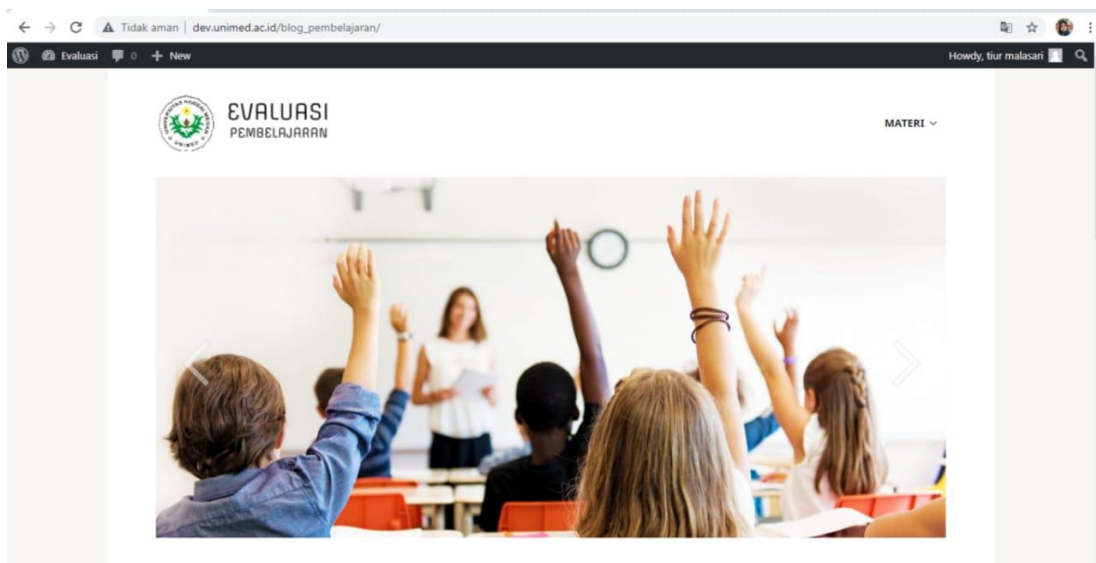
The data collection used in this study is to use journal articles, books related to Mathematical Evaluation, books related to learning media, and also various relevant sources.

c. Product Design

The initial product was designed by making an LMS designed with the KKNi learning needs, a Virtual Video for Mathematics Evaluation Learning made using kinemaster and filmora which can replace the teacher to teach in front of the class, meaning that this Virtual Video made will be able to represent learning in the classroom that we do.



Picture 2. LMS front view



Picture 3. Home Management System Management (LMS)

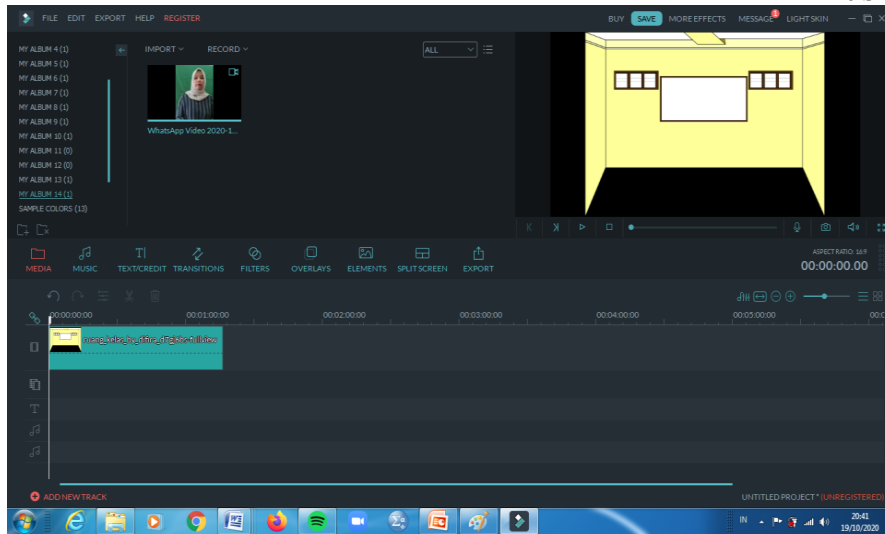
The screenshot shows a web browser displaying the course results for 'EVALUASI PEMBELAJARAN MATEMATIKA'. The page features a green notification bar stating 'You have passed this course with a grade of 0%'. Below this, a list of lessons is presented with their corresponding grades. The lessons are numbered 1 through 16, with the final lesson being 'UJIAN AKHIR SEMESTER (PROYEK)'. The total grade is shown as 0%. On the right side, there are navigation buttons for 'MATERI' and 'MATERI SAYA', and an 'ARSIP' section with dates for December and November 2019.

Lesson Title	Grade
PERTEMUAN 1 : KONTRAK KULIAH	N/A
PERTEMUAN 2 : PRINSIP PENILAIN	
PERTEMUAN 3 : SYARAT PENILAIAN	
PERTEMUAN 4 : LANGKAH PENYUSUNAN ALAT PENILAIAN	
PERTEMUAN 5 : PRESEN CBR	N/A
PERTEMUAN 6 : PEMBUATAN TES	
PERTEMUAN 7 : PENYUSUNAN SOAL NON TES	
PERTEMUAN 8 :PRESEN CJR	N/A
PERTEMUAN 9 : UJIAN MID SEMESTER	N/A
PERTEMUAN 10 : ANALISIS ALAT PENILAIAN	
PERTEMUAN 11 : UJI COBA INSTRUMEN	
PERTEMUAN 12 : UJI VALIDASI DAN RELIABILITAS	
PERTEMUAN 13 : PRESEN RI	N/A
PERTEMUAN 14 : PENGOLAHAN DATA HASIL INSTRUMEN	
PERTEMUAN 15 : HASIL UJI COBA INSTRUMEN (MR)	
PERTEMUAN 16 : UJIAN AKHIR SEMESTER (PROYEK)	N/A
<b>TOTAL GRADE</b>	<b>0%</b>

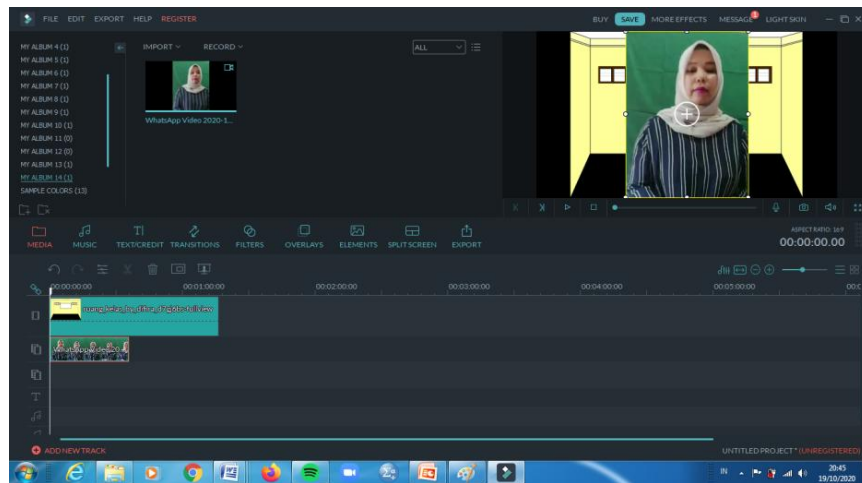
Picture 4. KKNi Based LMS With 6 Tasks

## 2. Making the Initial Design of the Product

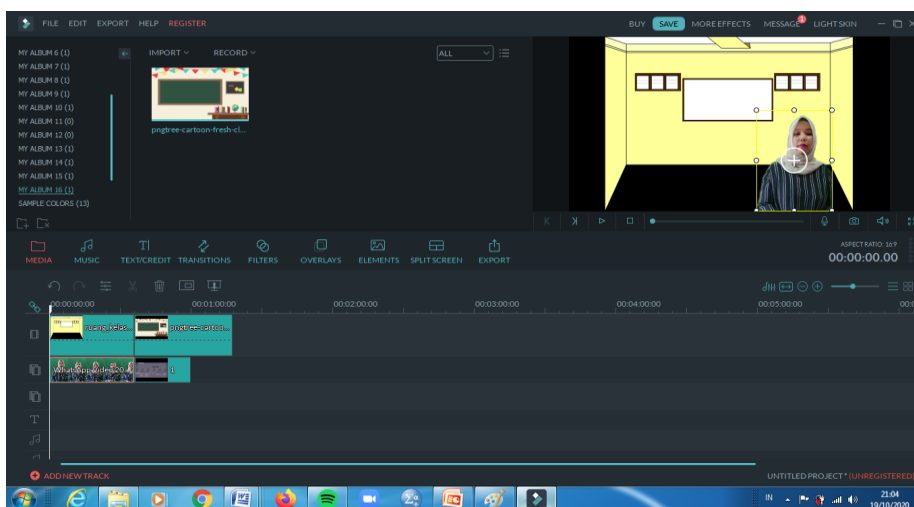
The technical steps for working on virtual learning media in the manufacture of the initial product are as follows:



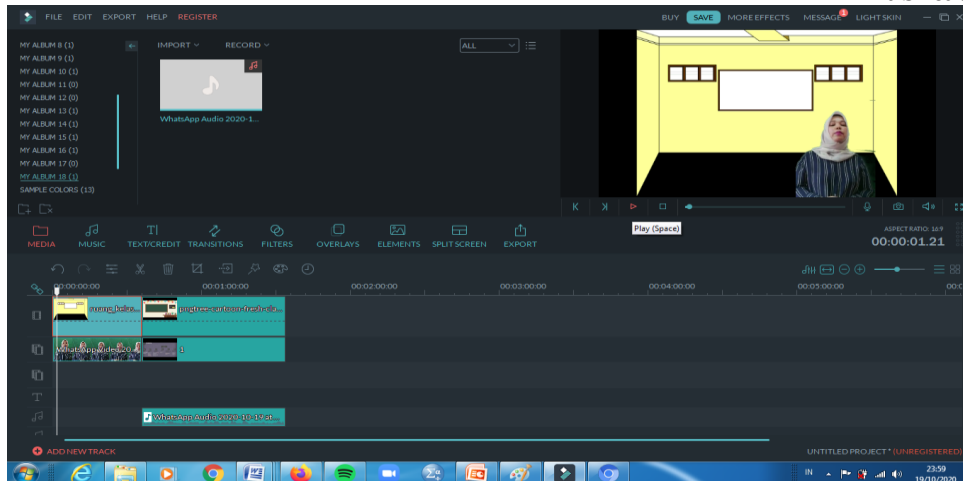
Picture 5. Insert a background on the learning video



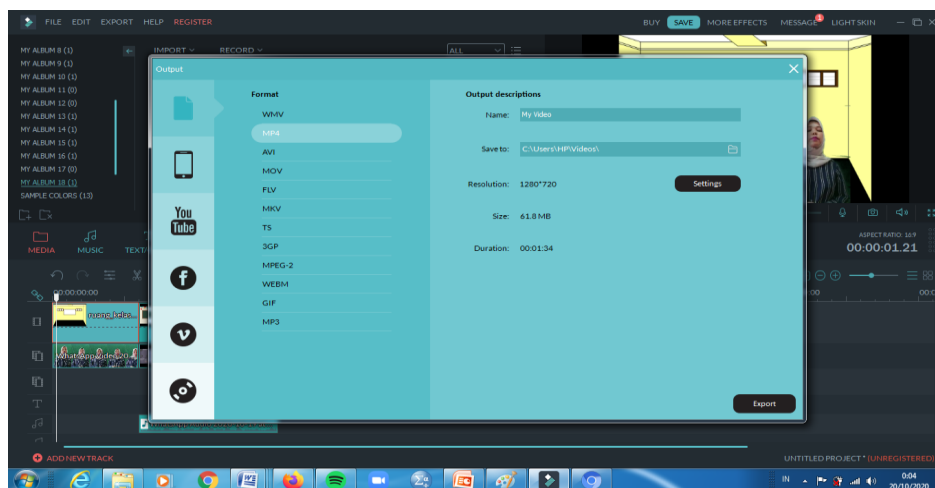
Picture 6. Include video material on the learning video



Picture 7. Insert a power point on the learning video



Picture 8. Insert audio on the learning video



Picture 9. Save Learning Video

### 3. Design of Learning Media Validation Results by Experts

The products made by these researchers are validated by experts in order to create good and quality products. With the assessment carried out by 4 experts consisting of material experts and media experts. The research media expert asked two experts for an assessment, namely Mr. Budi Halomoan Siregar M.Sc and Mr. Deni Haris M.Pd. Description of Learning Media Validation Results by Material Experts

#### Description of Learning Media Validation Results by Media Experts

Validation of instructional media experts is carried out to test the quality of content, language, and presentation of learning media using Virtual Video. As for the validators as media experts in this study were Mr. Budi Halomoan Siregar M.Sc and Mr. Deni Haris M.Pd. Data from media expert validation results can be seen in the following table:

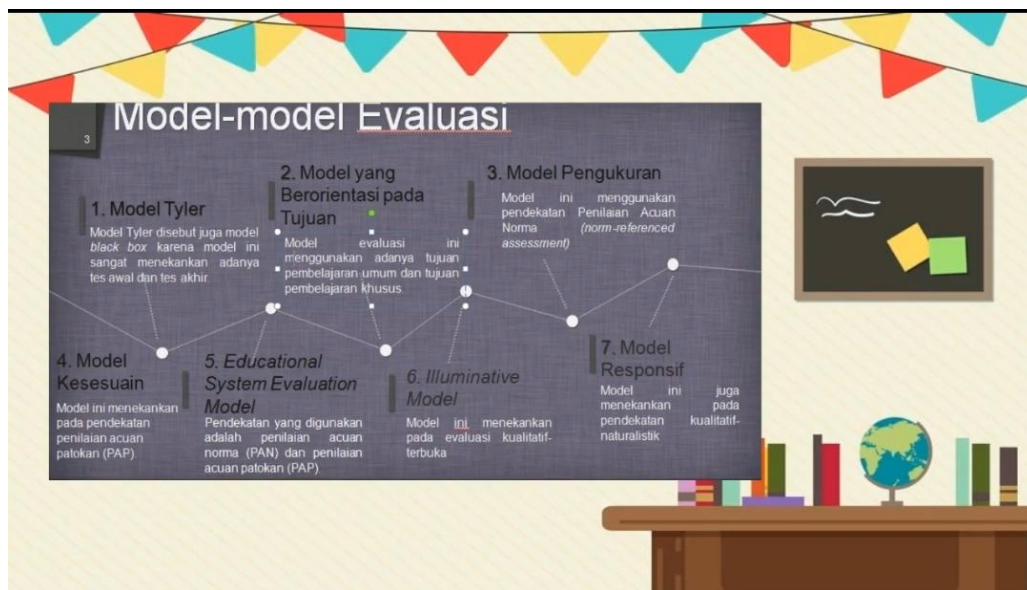
**Table 1. Validation of instructional media experts**

No	Aspect	Percentage	Criteria
1	Content	90%	Very good
2	Language	85%	Very good
3	Presentation of learning media using Virtual Video	88%	Very good
	Average	87,7%	Very good

The assessment of the two validators on the aspect of content quality was obtained with a percentage of 90%, in the language aspect it was obtained with a percentage of 85%, and the presentation aspect of educational games obtained results with a percentage of 88%. So that the total percentage obtained from the aspects of content quality, language and presentation of Virtual Video is 87.7%.

#### 4. Design Revision

The results of validation by experts obtained suggestions regarding learning media made by researchers, including the need to add some explanations in the video such as in-class activities, follow-up activities that have not been seen and provision of reinforcement at the end of learning has not been seen. The advice given by media experts is used in the product improvement process.



Picture 10. Display after Revision

Furthermore, based on validation to material experts, it has been stated that the material displayed in each media is in accordance with the Learning Outcomes of the Learning Evaluation Subject at the Faculty of Mathematics and Natural Sciences, State University of Medan.

#### 5. Description and Analysis of Trials by Students

Product testing is carried out in 2 ways, namely small class trials and large class trials. This trial was carried out for students who took the Mathematical Evaluation course at FMIPA UNIMED.

##### a. Small Class Trials

Testing is done to students by filling out a questionnaire that has been distributed with the link provided.

Table 2. Small class trials

No	Aspect	Percentage	Criteria
1	Content	80,8%	Very good
2	Language	83%	Very good
3	Presentation of learning media using Virtual Video	81%	Very good
	Average	81,6%	Very good

The aspects that are assessed are the quality of the content, the appearance of the Virtual Video media and the language. 80.8% is the result for content quality, 83% is the result of Virtual Video display, and 81%



is the result of the language aspect and all three have very good criteria. Overall the results were 81.60%. The conclusion is that this media is very good to use.

#### IV. DISCUSSION

The resulting Mathematics Evaluation learning media is in the form of Virtual Video media. This learning media was developed using the Sugiyono development method. The product development steps are as follows: 1) Potential and Problems, 2) Gathering Information, 3) Product Design, 4) Design Validation, 5) Design Improvement, 6) Product Testing, 7) Product Revision, 8) Testing Usage, 9) Product Revision, and 10) Mass Production.

Until now, the media has been developed and has been through validation by 4 validators consisting of 2 media experts and 2 material experts. And it has been through small group trials and the results are in the "Very Good" category.

#### V. CONCLUSION AND SUGGESTION

Based on the previous explanation, it can be concluded that the daily evaluation tool using the Kahoot application is very feasible to use. The final assessment response from students also shows a percentage of 81% with the criteria "very interesting."

Suggestions submitted to researchers and other developers or teachers, this Kahoot application can be used as a reference in creating or developing tests or evaluations in learning.

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