Problem Based Learning (PBL) Videoscribe:
An Alternative Learning in the Twentieth Century

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Abstract:- **This is a development study aimed at determining the development and effectiveness of problem-based learning-based VideoScribe learning media in computer-based accounting learning multimedia courses and computer applications. The ADDIE model is used in the research method, which stands for analysis, design, development, implementation, and evaluation. Data analysis techniques include quantitative and qualitative descriptive methods. According to the findings of the study, the development of problem-based learning-based VideoScribe learning media in computer-based accounting learning multimedia courses and computer applications can improve 4C skills, namely critical thinking, ability to work well with others, communication skills, and creativity, all of which can be applied to learning in the twenty-first century.Product quality is thought to be worthy of development if it meets the criteria of validity, practicability, and effectiveness. The validity value is determined by the material and design expert team's score at the very valid validity level. The practicality test processing results revealed that the responses of lecturers and students stated that the media was very practical. In terms of the effectiveness of obtaining learning outcomes with a satisfactory and very effective average student score VideoScribe media was tested in small groups with positive results, making it appropriate for use in large group learning groups.**

Keywords:- *Computer Applications, Multimedia, and PBL.*

I. INTRODUCTION

The development of the 21st century has an impact on several sectors, one of which is the education sector. This advancement has an impact on learning that employs technology-based learning media (IT). Learning in the twenty-first century must be capable of preparing future generations of Indonesians to welcome advances in information and communication technology in social life. The implications for learning in Indonesian schools necessitate that all educational stakeholders acquire ICT literacy skills. Teachers, students, and even students' parents must be technologically literate, able to communicate effectively, think critically, solve problems, and collaborate. Teachers, students, and even students' parents must be technologically literate, able to communicate effectively, think critically, solve problems, and collaborate. Teachers must be able to design learning with the aid of technology in order for learning to take place effectively and efficiently (Syahputra, 2018). Teachers and students in the 5.0 era must understand and practice digital literacy. Public literacy efforts not only introduce media but also synergize thinking skills with daily activities that lead to increased productivity.

The development of digital skills is now expected to be a major focus of global education policy (Eynon, 2021). Students' online skills, including their ability to search for information on the Internet, can vary (Santos et al., 2013). In Turkey, Bayrak and Yurdugül (2013) discovered that male students have higher levels of digital literacy than female students.Education is expected to change and innovate as a result of digital technology (Hassan & Mirza, 2021). It is critical to have good self-study skills in order to maximize students' potential. According to Galinsky (2010), one of the basic skills that individuals must have is directed learning skills, so independence is the key word in education. According to Tetra (2018), the level of digital literacy of students in learning is still low, particularly on ethical indicators, discovery indicators, presentation indicators, and creativity indicators, necessitating the use of learning models that integrate digital media and online systems. Learning objectives are influenced by the learning media that is designed and used. Films, slides, photos, and videos are examples of technology-based media (Wulandari, 2016: 6). The issue is a lack of interaction between lecturers and students. The issue is that students do not fully interact in online communication, with only a few actively participating; another issue is that students' interest in reading remains low. Because the media plays an important role in conveying information, developing media is a solution to overcome learning problems in the course Multimedia learning. Accounting software and computer applications.

VideoScribe is a type of learning media that can be used in the twenty-first century. VideoScribe includes features such as pictures and handwriting, as well as design animations on a white screen, to help students understand material concepts (Audain, 2014: 112). The purpose of VideoScribe is to summarize material in order to make it more practical, interesting, and to stimulate the imagination of its users (Chun, 2013: 8). According to Daryanto (2010: 88), the material will be presented in the form of a video that can be viewed online or offline, thereby supporting both direct and distance learning. According to the findings of Musyadat's (2015) research, the VideoScribe medium was declared feasible to support learning so that students were more focused on understanding the material, interactions went well, material was conveyed well, and learning outcomes improved. Wahyuni and Sulistiyo (2017) discovered that learning with interactive CD-ROM media based on VideoScribe was more effective in supporting learning. Wulandari (2016: 62) describes VideoScribe as a medium that can increase students' interest in learning.

VideoScribe benefits include increased visual and audio power, clarification of material concepts, and increased motivation and enthusiasm (Air et al, 2015: 7-11). Meanwhile, Meilandari (2022) used VideoScribe because it has the advantage of being able to be used as a tool in the learning process, which can increase students' enthusiasm and desire to learn while also creating an enjoyable learning process due to the interesting material presented. As a result, the researcher carried out a study with the goal of determining the feasibility and development of Problem-Based Learning-based VideoScribe learning media in Multimedia lectures for computer-based Accounting learning and computer applications.

II. RESEARCH METHODS

This is a research and development project (R&D). According to Sugiyono (2014), research and development are research methods used to produce specific products and test their effectiveness. Research and development is a study that aims to create new products through the development process (Mulyatiningsih, 2014: 161). It can be concluded that Research and Development (R&D) is research with the primary goal of improving product quality through development tests.

This study employs a development research method (Research and Development) based on the ADDIE development model (Analysis, Design, Development, Implementation, Evaluation). According to Silalahi (2015), development research is research that focuses on developing products, both industrial and educational products, that are tested systematically in the field, evaluated, and perfected until they meet the criteria of effectiveness and quality and are suitable for use.

The ADDIE model is divided into five stages: analysis, design, development, implementation, and evaluation. The first stage before developing a product is the analysis phase. At this point, the learning needs and objectives are weighed against what students will learn. The four-stage development model is simplified into three stages: 1. analysis, 2. design, and 3. development. At this stage, the simplification is carried out due to the researcher's limited time, so the researcher only focuses on three aspects.

- **Phase I: Analysis**
  During the define stage, pay attention to and adjust the character and environment. The define stage consists of five steps: first, analyze learning problems, second, analyze student character, third, analyze material, fourth, analyze learning objectives, and fifth, analyze assignments.
- **Phase II: Design**
  The design stage is completed with the goal of creating the initial learning. At this stage, four steps must be completed: (1) determining indicators, (2) selecting the appropriate media (media selection) based on the characteristics of the material and learning objectives, (3) selecting the layout or design of teaching materials, and (4) creating an initial design based on the format chosen.

- **Stage III: Develop**
  The development stage is the stage of product development that consists of two steps: (1) assessment by design and material experts, followed by revisions, and (2) product testing. The goal at this stage of development is to create the final form of the learning device after going through revisions based on expert or practitioner input and trial results data. The research was conducted at the Accounting Education Study Program at the University of PGRI Madiun over the course of four months. This study included 30 students of the fourth semester enrolled in the Computer-Based Accounting and Computer Application Learning Multimedia course for the 2021–2022 academic year.

A. Validation Sheet
The validation sheet is used to collect input data from design and materials experts. Input is used as a reference when revising or improving the videos and modules created. The next step is to create a grid that will serve as the foundation for a validation sheet. In this study, the points on the validation sheet were determined based on a literature review.

B. Test
In this study, tests were used to assess student learning outcomes. The test is administered via VideoScribe learning practice.

C. Questionnaire
Formalized questionnaire Lecturer and student assessment questionnaires are used to collect information about lecturers' and students' statements and opinions. The lecturer and student evaluation questionnaires were administered using a Likert scale with five categories: very practical, practical, doubtful, not practical, and extremely impractical.

III. DATA ANALYSIS TECHNIQUE

Data analysis techniques are used to create high-quality video and module products that meet the criteria for validity, practicability, and effectiveness. The following are the steps in analyzing the developed product quality criteria:

A. Validity Evaluation
Validity is assessed using the validation sheet. The material validation sheet data for the module is analyzed in the following steps: Validators obtained from expert lecturers tabulate the data. Data tabulation is accomplished by providing feedback on aspects of scoring scores 1, 2, 3, 4, and 5.

Validity Criteria	Validity Level
85,01%-100%	Very True
70,01%-85%	Quite True
50,01%-70%	Less Valid
01%-50%	Invalid

Table 1: Validity Criteria

(Akbar, 2013)

No.	Aspect	Indicator	Question item
1	*Self Instructional*	The objectives are clearly stated.	1
		Learning materials are organized into small units.	2
		Give specific examples and illustrations.	3
		Displays practice questions, assignments, and other similar items.	4
		Contextual	5
		Use simple, communicative language.	6
		A list of learning materials is provided.	7
		There is an evaluation instrument.	8
		There are instruments available to assess the level of mastery of the subject matter.	9
		There has been feedback on the assessment.	10
		There is information about references that support the material Learning.	11
2	*SelfContained*	The module includes all instructional materials.	12
3	*StandAlone*	The module is media-independent.	13
4	*Adaptive*	The module evolves with the advancement of science.	14
5	*UserFriendly*	Use of easy-to-understand language	15
		Use common language.	16
6	Characteristics *Problem Based Learning*	Utilizing context as a learning foundation	17
		Using the appropriate model	18
		Using the outputs of student construction	19
		There are some inquiries that can encourage participation.	20
		There is a connection between the creation of instructional materials and other course materials.	21
7	Principle *Problem Based Learning*	There are inquiries that instruct learners to locate return-guided	22
		Students are liberated to express their ideas and engage in debate because to modules.	23
		Some inquiries encourage pupils to create their own models.	24

Table 2: Material validation expert assessment questionnaire grid

No	Aspect	Indicator	Question item
1	Format	Uniform format	1
		A suitable paper format	2
		Easy-to-understand icon use	3
2	Organization	The idea map is present.	4
		Organization of the information	5
		Illustrations and photos are placed in the right places.	6
		The order of the chapters, units, and paragraphs is suitable.	7
		For pupils, titles, subtitles, and descriptions are simple to understand.	8
3	Attractiveness	Interesting cover	9
		Interesting content	10
		Interesting drills and tasks	11
4	Size and form Alphabet	The lettering are appealing and simple to read.	12
		Use only a few fonts.	13
		Using capital letters appropriately	14
5	Space (blank space)	Judicious use of whitespace	15

Table 3: Design Validation Expert Assessment Questionnaire Grid

No.	Aspect	Indicator	Question item
1	*Self Instructional*	Objectives are clearly stated	1
		The educational resources are contained in compact modules.	2
		Give instances and illustrations	3
		displays sample tests, homework, and other things	4
		Contextual	5
		Utilize clear, concise wording.	6
		A list of the learning materials is available.	7
		There is a measurement tool.	8
		The degree of mastery can be measured with several tools.	9
		There is feedback on the assessment	10
		There is information about available references.	11
2	*SelfContained*	The module includes all instructional materials.	12
3	*StandAlone*	The module operates apart from other media.	13
4	*Adaptive*	The lesson plan changes to reflect advances in science and technology.	14
5	*UserFriendly*	language use that is simple to understand	15
		Make use of standard terminology.	16
6	Atractiveness	Interesting cover	17
		Interesting content	18
		Interesting drills and tasks	19

Table 4: Student and Lecturer Evaluation Questionnaire Grid

B. A Practicality Assessment

An evaluation questionnaire for both students and lecturers was used to calculate the practicality analysis.

$$P = \frac{A}{B} \times 100\% \dots\dots\dots\dots\dots\dots(Sugiono, 2014)$$

Note:
P = Percentage of student responses
A = Total score obtained
B = Total ideal score

C. Analysis of Effectiveness

The importance of learning outcomes provides insight into the efficiency of the VideoScribe medium in research and development.

No.	Indicator	Small Class (student)	Big Class (student)
1.	The number of Accounting Education students who obtained post test scores ≤ 70	5 – 6	26 – 30
2.	Excellent 85 to 100	4 – 5	23 – 25
3.	Successful 70 to 84	3 – 4	18 – 22
4.	Moderately effective 55 to 69, 40–54 are less effective	2 – 3	14 – 17
5.	ineffective ≤39%	≤ 2	≤13

Table 5: Effectiveness Indicators

Learning Integrity Formula

$$KB = \frac{T}{Tt} \times 100\% \dots\dots\dots\dots\dots\dots(Trianto,2011)$$

Note:
KB = Percentage of learning completeness
T = Total score obtained by students
Tt = Total score

IV. RESULTS AND DISCUSSION

This Research and Development is carried out with a 3-Stage procedure, including:

- **Stage 1: Analysis:** At this point, an examination of the delivery of the content for the computer-based accounting multimedia course and computer applications is done. The development of online learning, student characteristics in the Accounting Education Study Program connected to student experience and literacy in learning, and student attitudes toward learning material are all covered in the preparation materials for the first meeting. Lecturers and students can use the software VideoScribe to produce educational animation in the style of a whiteboard (VideoScribe for Education). Users can only add writing and images to the canvas. An early version of Sparkol VideoScribe.
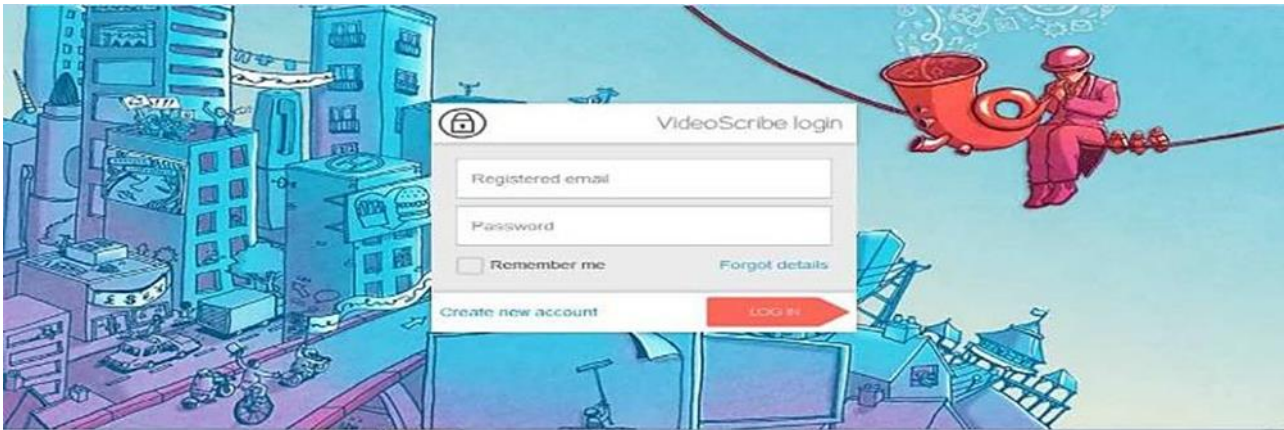
Fig. 1: First Display

- **Stage 2 : Design:** During the media selection step of the design process, the material and student characteristics are changed. The following step is to develop a problem-based learning-based VideoScribe learning media module that students will use from start to finish. Selection of the common format for the compilation of the images, sounds, and animations. Choose in accordance with the requirements of the lesson plan material. The module has been designed as simply as possible so that students may easily use it directly and study it afterwards during practice.

V. RESULTS AND DISCUSSION

This research and development is carried out using a three-stage process that includes:

- **Stage 1: Analysis:** A requirements analysis is conducted during the defining phase. The intended needs analysis is the content that will be presented in the Learning Media and Teaching Materials Development course at the 12th meeting. It includes content for the development of online learning, student characteristics in the Accounting education study program related to student experience and literacy in learning, and student attitudes toward learning material.

- **Stage 2: Design:** During the media selection step of the design process, the material and student characteristics are changed. The following step is to develop a problem-based learning-based VideoScribe learning media module that students will use from start to finish. selection of the common format for the compilation of the images, sounds, and animations. Choose in accordance with the requirements of the lesson plan material. The module has been designed as simply as possible so that students may easily use it directly and study it afterwards during practice. Here are the outcomes of the development of VideoScribe:
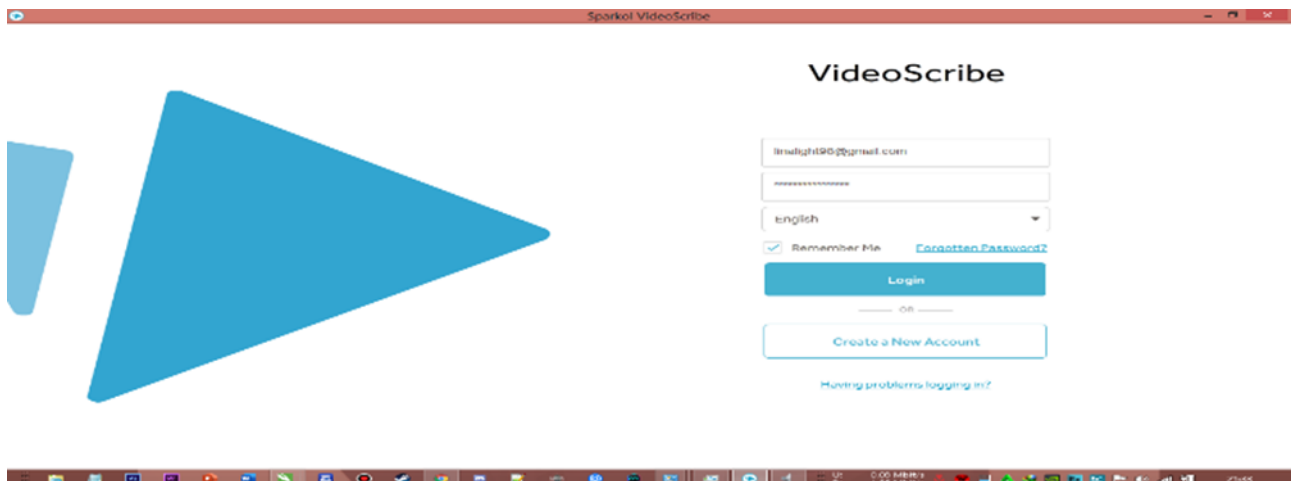

Fig. 2: The VideoScribe registration procedure (document created by researchers)
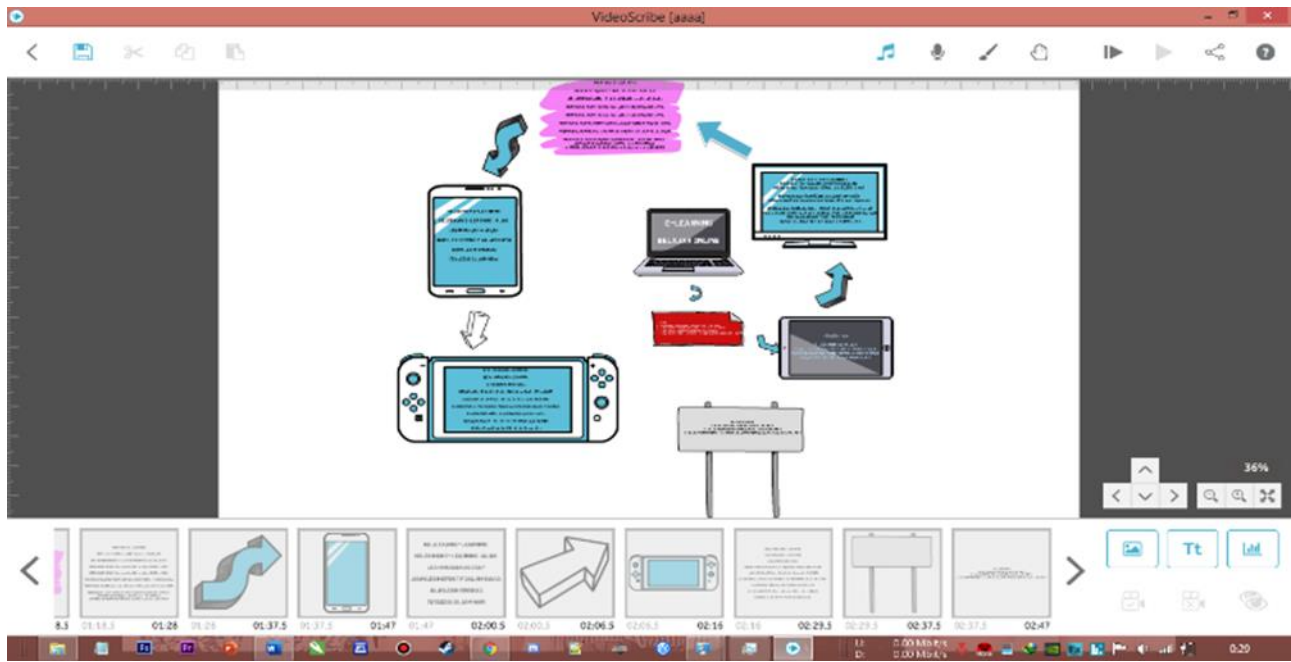
Fig. 3: Shows the VideoScribe video design (Source: Research Documents)

- **Stage 3: Development:** At this point, media goods are tested and validated in accordance with standards, objectives, and aims. evaluation of the media and material experts' validation findings. After products have been validated, they are changed based on suggestions from media and material design specialists. The updated material was subsequently evaluated by students during lectures. Supporting lecturers who utilize media in their instruction, study program lecturers participate in assessing learning based on media development by contributing comments, feedback, and reactions to the media used in learning, including both modules and VideoScribe. Following the lecture, students offer commentary or reactions to the media. A PBL-based

VideoScribe learning media product bundled in the VideoScribe Learning Module is the final result of this research and development. to evaluate the viability of media and high-quality products by looking at their reliability, usefulness, and efficiency.

Experts in design and materials evaluated the media validity test. One instance of media expert validation was conducted. 15 assertions and 5 aspects are included in the presentation. The objective is to create a Problem Based Learning-based VideoScribe product that is turned into a quality product in terms of structure, organization, appeal, font shape or size, and space.

No	Value Vulnerable (i) Quantitative	Average Value	Qualitative Category
1	$\bar{x} > 63$	$\bar{x} > 4,2$	Excellent
2	$51 < \bar{x} \leq 63$	$3,4 < \bar{x} \leq 4,2$	Good
3	$39 < \bar{x} \leq 51$	$2,6 < \bar{x} \leq 3,4$	Enough
4	$27 < \bar{x} \leq 39$	$1,8 < \bar{x} \leq 2,6$	Not enough
5	$\bar{x} < \bar{x} \leq 27$	$\bar{x} < \bar{x} \leq 1,8$	Very less

Table 6: Validation Value for Media Experts

No.	Rated Aspect	Score
1.	Format	12
2.	Organization	20
3.	Attractivenness	12
4.	The letters' size or shape	12
5.	Space (Blank space)	3
Total		**59**
Value Range		$\bar{x} > 4,2$
Average Value		**3,93**
Value Category		**Baik**

Table 7: Results of Media Expert Validation for Each Aspect

In the range Mi + 0.6 Sbi X Mi + 1.8 Sbi, the final average of the media expert validation was 3.93, meeting the "good criteria".

No.	Rated Aspect	Validity Value %	Validity Level
1.	Format	77%	Pretty valid
2.	Organization	80%	Pretty valid
3.	Attractivenness	80%	Pretty valid
4.	The letters' size or shape	87%	Pretty valid
5.	Space (Blank space)	79%	Very valid
The Average value of validity		**80,5%**	**valid**

Table 8: Conversion of Validity Level by Design Experts

(Source: Results of Data Processing)

According to the description above, the final average of media expert validation is 3.9, which meets the "Good" standards, and the average value for total validity is 91.42%, which is considered to be at the "Very Valid" level of validity. These findings confirm study (Akbar, 2013) that the media is considered valid if the aggregate validity results are greater than 70%. It is clear that learning media, in the opinion of media specialists, is appropriate for educational purposes.

No	Value Vulnerable (i) Quantitative	Average Value	Qualitative Category
1.	$\overline{x} > 63$	$\overline{x} > 4,25$	Excellent
2.	$51 < \overline{x} \leq 63$	$3,4 < \overline{x} \leq 4,2$	Good
3.	$39 < \overline{x} \leq 51$	$2,6 < \overline{x} \leq 3,4$	Enough
4.	$27 < \overline{x} \leq 39$	$1,8 < \overline{x} \leq 2,6$	Not enough
5.	$\overline{x} < \overline{x} \leq 27$	$\overline{x} < \overline{x} \leq 1,8$	Very less

Table 9: Expert Value Conversion for Phase I Material

No.	Aspek yang dinilai	Nilai
1.	*Self Instructional*	35
2.	*SelfContained*	3
3.	*StandAlone*	3
4.	*Adaptive*	4
5.	*UserFriendly*	3
6.	Characteristics of *Problem Based Learning*	16
7.	Principle of *Problem Based Learning*	16
Total		**92**
Value Range		$\overline{x} > 4,2$
Average value		**3,84**
Value Category		**Baik**

Table 10: Results of Material Expert Validation for Each Aspect

No.	Rated Aspect	Score
1.	*Self Instructional*	35
2.	*SelfContained*	3
3.	*StandAlone*	3
4.	*Adaptive*	4
5.	*UserFriendly*	3
6.	Characteristics of*Problem Based Learning*	16
7.	Principe of *Problem Based Learning*	16
Total		**92**
Value Range		$\overline{x} > 4,2$
Average Value		**3,84**
Value Category		**Baik**

Table 11: Results of Material Expert Validation for Each Aspect

No.	Aspek yang dinilai	NilaiKevalidan %	Kategori
1.	*Self Instructional*	72,72%	Pretty valid
2.	*SelfContained*	60%	Less valid
3.	*StandAlone*	80%	Pretty valid
4.	*Adaptive*	80%	Pretty valid
5.	*UserFriendly*	100%	Very valid
6.	Characteristics of*Problem Based Learning*	72%	Pretty valid
7.	Principle of *Problem Based Learning*	86,66	Pretty valid
The validity average value		**76,66%**	**Pretty valid**

Table 12: Material Expert Percentage Conversion

No	Value Vulnerable (i) Quantitative	Average Values	Qualitative Category
1.	$\overline{x} > 63$	$\overline{x} > 4,25$	Excellent
2.	$51 < \overline{x} \leq 63$	$3,4 < \overline{x} \leq 4,2$	Good
3.	$39 < \overline{x} \leq 51$	$2,6 < \overline{x} \leq 3,4$	Enough
4.	$27 < \overline{x} \leq 39$	$1,8 < \overline{x} \leq 2,6$	Not enough
5.	$\overline{x} < x \leq 27$	$\overline{x} < x \leq 1,8$	Very less

Table 13. Expert Value Stage II Material Conversion.

No.	Rated Aspect	Score
1.	*Self Instructional*	47
2.	*SelfContained*	4
3.	*StandAlone*	4
4.	*Adaptive*	4
5.	*UserFriendly*	4
6.	Characteristics of *Problem Based Learning*	20
7.	Principle of *Problem Based Learning*	13
Total		**102**
Value Range		$\overline{x} > 4,2$
Average value		**4,25**
Value Category		**Excellent**

Table 14: Results of each Aspect's Material Expert Validation

In two stages, material expert validation was done. 24 assertions and 7 aspects are included in the presentation. Using data processing, it is possible to discover that the material expert validation findings from stage I received an average rating of 3.84 in the "Good" category. In the "Excellent" category, an average value of 4.25 was found at the second round of material expert validation.

No.	Rated Aspect	Validity Value %	Category
1.	*Self Instructional*	85,45%	Very valid
2.	*SelfContained*	80%	Pretty valid
3.	*StandAlone*	80%	Pretty valid
4.	*Adaptive*	80%	Pretty valid
5.	*UserFriendly*	100%	Very valid
6.	Characteristics of *Problem Based Learning*	80%	Pretty valid
7.	Principle of *Problem Based Learning*	86,66	Very valid
Average Validity Value		**85%**	**Pretty valid**

Table 15: Material Expert Percentage Conversion

(Sumber: Hasilpengolahan data)

Based on the given description, it can be concluded that the final average of the material expert validation is 4.25 on the "Excellent" criteria, and that the average validity level is "Pretty Valid " with a percentage of 85%. We can draw the conclusion that educational media, in the opinion of subject matter experts, are suitable for use in learning. Information about practicality was gathered via survey responses from professors and students. There were a total of 19 statements in the questionnaire that was provided. The

percentage of lecturers who responded to media inquiries yielded the following information:
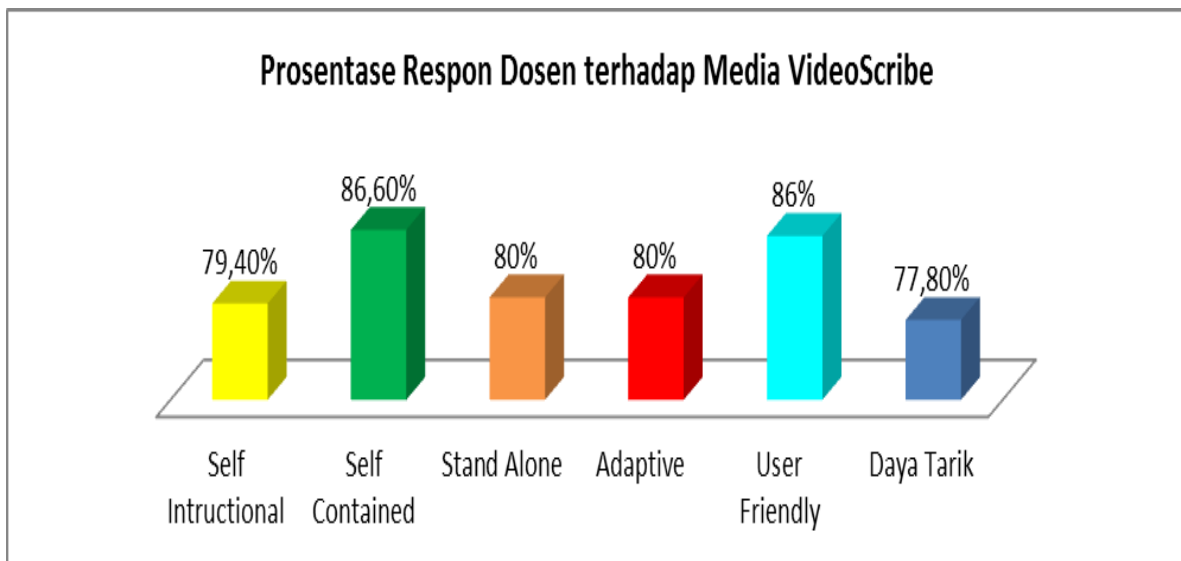

Fig. 4: VideoScribe Media Responses as a Percentage of Lecturer Responses

Based on the image above, the lecturer's response to the VideoScribe learning materials as a whole received an average score of 80.34 in the Very Practical area. This backs up Maharani's (2018) research, which claims that media is considered practical if it can be used in the real world and demonstrates that people perceive the content to be simple to understand. While this was going on, the following percentages of students responded to the learning materials from VideoScribe:
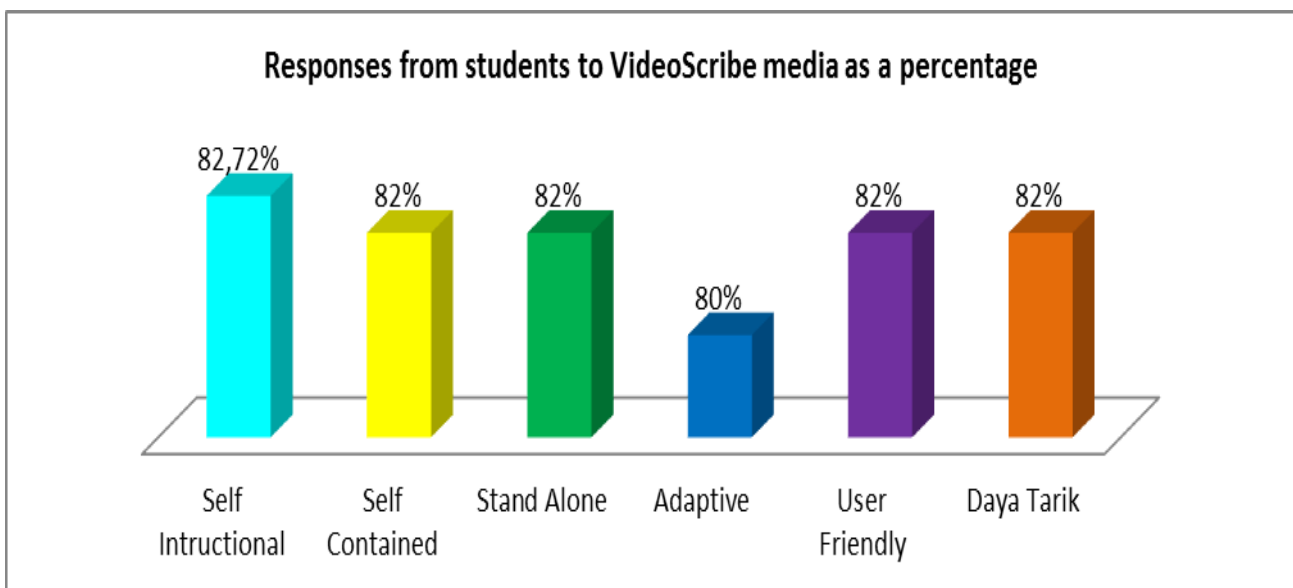

Fig. 5: Student Responses as a Percentage (Source: Data Processing Results)

According to the above table, the lecturer's response to VideoScribe's Aspects 1, 2, 3, 4, 5, and 6 as a whole received an average percentage of 82.21% that qualified it as **Very Practical**. These findings confirm Erlia's research from 2019 that suggests students can access VideoScribe media anywhere they are and study it there.

According to the effectiveness test, the average learning outcomes of 30 students working in large groups after using the VideoScribe media with an average score of 85.1 got a post-test score of 70 included in the **Very Effective category**. These findings corroborate Fadilah's research, Ahmad (2019), which found that the VideoScribe

learning media received favorable feedback from small-scale trials and was appropriate for usage on a wide scale.

VI. CONCLUSION

According to the findings of the evaluation data of media design experts and material experts, VideoScribe media based on Problem Based Learning (PBL) can be pronounced valid at the level of validity in the extremely valid category. The outcomes of the practicality test processing revealed that lecturers' and students' comments indicated that the media was included in the practical requirements. Learning outcomes are attained with an average student score that is satisfactory and meets the

requirements for being very effective. When tested in small groups, VideoScribe media had a favorable reaction and was deemed appropriate for use in learning groups with a high number of participants. These results show how VideoScribe media can help students learn to solve problems, can help students understand difficult or abstract concepts, can help students have fun while learning, can help students learn storytelling, narration, and design, and can help students use it to make exercises and assignments more interesting. VideoScribe media can be used as a student presentation tool for knowledge demonstration in class, supporting distant learning. This means that VideoScribe media can be used to assist online learning going forward.

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