ANALYSIS OF SUITABILITY OF SOLUTION COLLIGATIVE MATERIAL ASPECTS IN ARTICULATE STORYLINE-BASED LEARNING MEDIA FOR PGSD STUDENTS

Wahyudi[1*], Bagus Amirul Mukmin[2], Sutrisno Sahari[3], Qonita Salsabela[4]

sutrisnosahari@gmail.com[1], bagusamirulm@gmail.com[2], qonitasalsabela@gmail.com[3]

Primary School Teacher Education, Teaching and Education Faculty, Nusantara University PGRI Kediri[1,2,3,4]

Abstract: This study aims to determine the suitability of colligative material aspects of the solution in articulate storyline-based learning media with assessment indicators on the aspect of suitability of material with Basic Competency, suitability of material concepts with media, contextuality, depth of material, ease of material to understand, systematics, clarity of material, suitability of amount exercises with the amount of material presented, the ease of reviewing the material, motivating students as a whole. The research instrument was a questionnaire assessment sheet related to the suitability of the material with the Basic Competency in articulate storyline-based learning media based on the aspects that have been mentioned. The method used in this study is the one method, which is a research step using a qualitative approach. The research results of the suitability analysis of colligative material solutions on articulate storyline-based learning media were obtained from a validity questionnaire by two material experts. The suitability of material aspects of this media is the result of validator one giving an average score with a percentage score of 88% including very good criteria (very valid), and validator two giving a percentage of an average score of 82%, with a good category (valid). So it can be concluded that the suitability of the material aspects of the articulate storyline-based learning media is stated to be appropriate and valid.

Keywords: Material, Competence, Articulate Storyline

PRELIMINARY

The development of times, especially in the 21st century, where is almost everything is done digitally (Sari & Harjono, 2021). It cannot be denied that it is true that the existence of digital technology greatly helps human activities in supporting daily life, both in the world of work and in the world of education. This is becoming increasingly common year after year. Digital technology demands and supports the process of all human activities, where everyone is forced to coexist with today's technological sophistication.

Learning is the process of interaction between students and learning resources for the realization of learning objectives. Good learning is learning that can improve HOTS thinking skills and students' creativity (Gurung, 2020; Henriksen et al., 2020; Idris & Sida, 2019; Idris et al., 2019), and good learning is learning that provides opportunities for students to be active in building their own knowledge. By actively building their own knowledge and developing emotional intelligence, students will get more experiences that make learning more meaningful (Angela, 2014; Kostiainen et al., 2018).

Learning media is one of the communication tools used by teachers to convey material to students. Learning media will make learning more effective and efficient (Nurrita, 2018; Silalahi, 2020). Learning media makes learning interesting so that it makes students active and interested in participating in learning (Karo & Rohani, 2018; Tafonao, 2018; Wahid et al., 2020). Growing student interest in the learning process will affect student learning outcomes. The higher students' interest in the learning process, the learning outcomes of students will show an increase. Therefore the creation and use of media in the learning process must be adapted to the characteristics of students and current technological developments.

In this era of digital technology, the learning process is not fully adequate, Yumini & Rakhmawati, (2015). One of them is in the ongoing process of lecture learning in the Basic Concepts of Science course. There are no interesting and innovative teaching materials or modules and digital-based media to support the process of learning activities. At present what is often used, in general, is only in the form of Power Point (PPT) and there is no interesting innovative teaching material that is digital based and easy to understand and interesting at the same time when used as a learning support. Mobile learning has a positive impact on learning because through mobile learning, students can relate to teachers and other students by relying on connections from the internet (Rahmat et al., 2019).

Several previous studies have also proven that instructional media can improve self-regulated learning, learning outcomes and effectively maximize students' conceptual understanding (Fardila & Arief, 2021).

Thus, an articulate storyline-based learning media was created. According to (Setyaningsih, Rusijono, & Wahyudi, 2020) The articulate storyline learning media is

an alternative media that is used because of the many authoring tools programs, the articulate storyline is a software mix programming tool that can help learning designers from beginner to expert levels. The articulate storyline program has the advantage of being a simple smart brainware with interactive tutorial procedures through templates that can be published offline or online, making it easier for users to format it in the form of a personal web, CD, word processing, and Learning Management System (LMS).

Based on the phenomenon above, finding out the level of student mastery of a material can be done by giving tests and studying or analyzing student answers to questions given through diagnostic tests.

Based on the results of the material validation questionnaire survey at Nusantara University PGRI Kediri regarding the linkage of material with learning media, various results were obtained from material expert validation as follows: material validator 1 gave a score of 88% or very good percentage. Whereas for material experts 2, the results obtained were 82%, with a good predicate. Observations and interviews at Nusantara University PGRI Kediri based on unique teaching materials attract students' interest in learning, especially storylines which are one of the new teaching materials in the world of education, especially in college.

The purpose of this research is to determine the suitability of colligative material aspects of the solution on articulate storyline-based learning media with assessment indicators on aspects of the suitability of material with basic competencies, suitability of material concepts with media, contextuality, depth of material, ease of material to understand, systematics, clarity of material, suitability of the number of practice questions with the number of material presented, the ease of reviewing the material, motivating students as a whole. For now, the existence of an articulate storyline media in the material presented in it has novelty and is also a new thing for students of Nusantara PGRI University, Kediri City.

METHOD

This study used descriptive qualitative method. (Hartog, 1967) Qualitative descriptive methods are used to describe the suitability between material, methods, and a learning media, that is in colligative material solution in articulate storyline media.

This research was conducted at the Nusantara PGRI University, Kediri City, which is located at Jl. Ahmad Dahlan No.76, Mojoroto, Kec.Mojoroto, Kediri City, East

Java 64112. The sources of data used in this study include the following: (1) primary data derived from the results of validator or material expert assessments of 2 people, that are the first material validator and the second material validator (2) the results of interview process and direct and brief observation.

The research instrument in qualitative research is the researcher himself. Research instruments are tools that are selected and used by researchers in their activities to collect data so that these activities become systematic (Fabiana Meijon Fadul, 2019).

The method used in this research is a survey. According to (Arikunto S, 2009), a survey study is a research approach that is generally used for extensive and large data collection. Meanwhile, the data collection technique used in this study used an instrument in the form of a questionnaire. Questionnaire is a data collection technique that is carried out by giving a set of questions or written statements to respondents to answer (Olivers, 2019). According to Sugiyono (2009: 142), "A questionnaire is a data collection technique that is carried out by giving a set of questions or written statements to respondents to answer.

The variable in this study is the level of satisfaction in trying the articulate storyline media. Instrument validation in this study aims to determine whether an instrument is valid or not with certain criteria and is carried out by testing the instrument that has been made.

So in this study used five alternative answers, they are: very good (5), good (4), enough (3) less (2) very less (1). The Likert scale is used to measure attitudes, opinions, and perceptions of a person or group of people about social phenomena 29 (Sugiyono, 2009: 93).

The validity of the material was assessed by experts using the rating scale in the questionnaire. Experts (respondents) were asked to put a mark ($\sqrt{}$) in the column provided according to the statement assessed based on the situation. The data obtained will be added up to determine the validity of the average value.

According to Akbar Sa'dun (2017: 82), whether teaching materials and materials are valid or not can be concluded in the following way.

$$Va = \frac{Tse}{Tsh} \text{ X } 100\%$$

The results of validity value of the validation assessment instrument for articulate storyline teaching materials and materials can be interpreted by matching the criteria in the following table;

Tabel 1.1 Validity Criteria

No.	Criteria validity (achieved value)	Validity Level
1.	81,00% - 100,00%	Highly valid, highly effective, highly thorough, usable without improvement.
2.	61,00% - 80,00%	Valid enough, effective enough, complete enough, usable but needs minor improvement.
3.	41,00% - 60,00%	Less valid, less effective, or less complete, needs major repairs, it is recommended not to use it.
4.	21,00% - 40,00%	Invalid, ineffective, incomplete, unusable.
5.	00,00% - 20,00%	Very invalid, very ineffective, very incomplete, not usable.

Source: Akbar Sa'dun (2017: 82)

After each level of validity is known, then the following are material validation instruments by material expert 1 and material expert 2:

RESULTS

After the researcher has finished making interactive learning media using Articulate Storyline software as the initial product, and has been given to the assessor or validator expert by two experts of media and two experts of material, where validation is carried out once, that are validation with material experts and validation with media experts before conducting media trials on students.

The process of assessing the validity or suitability of colligative material aspects of the solution to Articulate Storyline learning media from two material experts is carried out by filling out a questionnaire about the validity of the material and data from the material validation process with material experts described in Tables 1.2 and 1.3 below:

Table 1.2 Material Expert Validity Questionnaire 1

No	Statements about teaching materials developed	Score				
		1	2	3	4	5
1	The suitability of the material presented in the learning media with basic competencies				√	
2	Conformity of the concept of subject matter with the media used					√
3	Contextuality				√	
4	The depth and completeness of the material				√	
5	Ease of material to understand				√	
6	Systematic, coherent, logical flow, and clear					√

No	Statement	1	2	3	4	5
7	Clarity of discussion descriptions, examples, and exercises				√	
8	Appropriateness of the number of exercises with the amount of material presented					√
9	Subject matter can be reviewed again					√
10	The contents of the learning media as a whole can motivate students in learning				√	
Total score			44			
Max Score			50			
Score Percentage			88%			

Table 4.4 The results of the material validity test by material experts 2

No	Statement About Teaching Materials Developed	Score				
		1	2	3	4	5
1	The suitability of the material presented in the learning media with basic competencies				√	
2	Conformity of the concept of subject matter with the media used				√	
3	Contextuality				√	
4	The depth and completeness of the material				√	
5	Ease of material to understand				√	
6	Systematic, coherent, logical flow, and clear					√
7	Clarity of discussion descriptions, examples, and exercises				√	
8	Appropriateness of the number of exercises with the amount of material presented				√	
9	Subject matter can be reviewed again				√	
10	The contents of the learning media as a whole can motivate students in learning				√	
Total score			41			
Max Score			50			
Score Percentage			82%			

DISCUSSION

Mobile learning-based learning is an interactive learning medium capable of making students more active and highly motivated in learning (Rohmah and Bukhori, 2020). Independent learning is a predictor of learning outcomes (Marlina, 2017:75). Learning outcomes are the most important thing in learning, because they will produce changes in behavior, which include cognitive, affective, and psychomotor aspects (Sudjana, 2014: 22).

A media when understood in outline is human, material, or events that build conditions that enable students to acquire knowledge, skills, or attitudes (Angela, 2014; Kostiainen et al., 2018).

The advantage of learning media with articulate storyline facilities is that the material delivered becomes more varied in the delivery concept (Juhaeni, Safaruddin, & Salsabila, 2021). The drawback of the articulate storyline media regarding the suitability of the material contained in it is that there are still some parts that have been missed and have not been conveyed. Most likely found incompatibility of existing material with the concept.(Najmah, Khaeruman & Khery, 2014).

Based on the data that has been presented in the validation results table contained in the previous discussion, the results of first expert validation can be concluded that the material is appropriate for the basic competencies, with a score of 4 (good). Suitability of the concept of learning material with the media used with point 5 (very good). In terms of contextuality, the material is stated to be (good), is getting point 4. The depth and completeness of the material is stated to be (good), by point 4. The material is stated to be easy to understand, stated by point 4 (good). The material is systematic, coherent, logical flow, and clear with a point of 5 (very good). The description of the discussion, examples, and exercises is clear and (good), with point 4. The number of exercises and the amount of material presented is already (very good), with point 5. The learning material can be reviewed again, so that it can be said (very good) with point 5. The contents of the learning media can be said (good) with point 4 and motivate students in learning.

Material expert one revealed that the material was good, and enough to be given to students. Overall, the material in the learning media is good, and appropriate for the basic competencies and learning objectives, the material is easy to understand, the plot is logical and easy to understand. It also includes practice and discussion questions.

Figure 1.1 Display of learning materials

Based on the picture above, the expert argued that the main display of learning material in the media*'s articulate storyline* still doesn't look right. Supposedly, in the first display, only the title of the material will be presented, which is by including the title of each material that will be presented on each subsequent slide after the display above. So that users of this articulate storyline

media can use the media coherently and no material is missed, the material can be understood sequentially.

According to material experts, the initial appearance of the material menu is appropriate. In the initial display, there is the title of learning material followed by the sub-material. This makes it easier for users to know the mapping of what materials will be studied. So that users can determine which material they want to learn first.

Based on the opinion of the two experts, it can be concluded that in terms of presenting the material, it would be better if the media *articulate storyline* is made by adding subtitles to each slide transition.

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Figure 1.2 Ability test material

Based on the picture above, material experts one stated that the media's articulate storyline is good. Because it presents two types of ability tests that can be

carried out or tried by users, they are (1) Test Questions (2) Practicum. Then media users will be able to choose as they wish, which ability test they will try independently.

Based on the data presented in the table above, the results of second expert validation can be concluded that the material is appropriate for the basic competencies, with a score of 4 (good). Suitability of the concept of learning material with media used with point 4 (good). In terms of contextuality, the material is stated to be (good), which is getting point 4. The depth and completeness of the material are stated to be (good), by point 4. The material is stated to be easy to understand, stated by point 4 (good). The material is systematic, coherent, logical flow, and clear with a point of 5 (very good). The description of the discussion, examples, and exercises is clear and (good), with point 4. The number of practice questions and the amount of material presented is already (good), with point 4. The subject matter can be reviewed again, so that it can be said (good), with point 4. The contents of learning media can be said to be (good) with point 4 and motivate students in learning.

Based on the questionnaire that was given to the two material experts above, it can be concluded that overall the material is good, and sufficient to be given to students. The material in the learning media is good, appropriate for the basic competencies and learning objectives, material is easy to understand, the flow is logical and easy to understand. Users not only follow the material but can also provide participation and hone skills, because in this articulate storyline media it is facilitated that several practice quizzes are provided, quiz scores, and discussion after quiz is done by the user.

For a more detailed explanation based on the results of the two material expert validations, they are as follows:

Figure 4.13 Learning Materials

The second material expert said that the media articulate storyline is good in terms of learning materials because it is included in the initial material menu regarding options or choices for the scope of sub-material which media users can later choose

from. Based on the attached image above, there are four sub-material options that can be selected directly.

Figure 4.14 Solution Colligative Knowledge Material

In the previous media, material for colligative theory of solutions was still limited to the material included. However, after a process of improvement or revision was carried out based on the assessment of material experts, the current articulate storyline can be said to be very good. Because media articulate storyline in terms of theoretical material is complete and solid material. So that later it can facilitate and increase the understanding of this articulate storyline media user.

Figure 4.15 Solution Colligative Ability Test

The second material expert stated that the media articulate storyline was good. Because it presents two types of ability tests that can be carried out or tried by users, they are (1) Test Questions (2) Practicum.
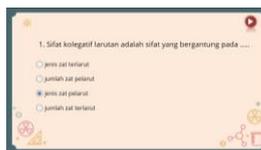
Figure 4.16 Solution Colligative Test Problems

Quiz or test questions have been included which can later be tried out directly by the users of this articulate storyline. In these test questions, it will be known how far the ability to understand related to the colligative material of the solution that has been studied and to measure the ability independently related to colligative material of the solution

Figure 4.17 Material Calculations on Colligative Solutions

Before the revision was carried out based on the material expert's assessment, this media did not include material related to calculations and examples of problems calculating colligative solutions. However, after the repair, there is material for calculations and examples of calculations in the media articulate storyline.
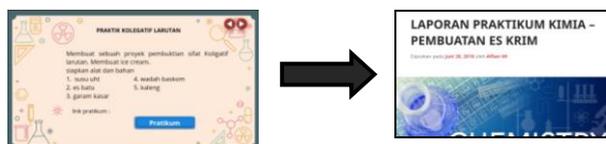

Figure 4.18 Solution colligative practicum

Ability test still needs to be maximized. It would be even better if the link redirected to a video example of a colligative solution experiment. So, users can maximize their understanding of the practicum experiment process and create a more attractive impression for users.

CONCLUSION

Analysis of Suitable Aspects of Colligative Material Solutions in Articulate Storylane-Based Learning Media for PGSD Students has met the criteria in the good category. There is already a suitability of colligative material aspects of the solution in articulate storyline-based learning media with assessment indicators on aspects of suitability of material with Basic Competency, suitability of material concepts with media, contextuality, depth of material, ease of material to understand, systematics, clarity of material, suitability of the number of exercises with the amount of material presented, the ease of reviewing the material, motivating students as a whole. the material is good, and sufficient to be given to students. Overall, the material in learning media is good.

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