WHAT KIND OF LEARNING MEDIA THAT LECTURERS AND STUDENTS WANT? NEED ANALYSIS ON HYBRID SCIENCE LEARNING

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Abstract

The pandemic that has passed had an impact on the field of education, one of which is in hybrid science learning. This study aims to obtain information related to the learning media needed by students and lecturers in hybrid science learning. The research method applied is quantitative research with data collection techniques, namely through questionnaires. The population of this study was 120 students and 5 lecturers in the Department of Elementary School Teacher Education, Universitas Negeri Semarang. The data were analyzed using a descriptive quantitative approach. The results of the study indicate that there is a need to develop hybrid learning media in science learning. Lecturers and students agree that they need learning media that can support science learning in the form of technology-based media, contain contextual learning materials, supported by image, and can present real elements. This is assessed by lecturers and students to make it easier to understand the learning material. Thus, it can be understood that the development of science learning media with the previously mentioned criteria is needed in improving students' understanding of science concepts in hybrid science learning.

Keywords

Learning Media, Hybrid Learning, Student, Lecturer, Science Learning

1. Introduction

The post-pandemic condition of Covid-19 is a transitional condition because of the pandemic that has been going on for the last two years, so that there have been many readjustments to all areas of human life in the world, including the education sector. The education sector experienced changes both before, during, and after the pandemic. In Indonesia, these changes occur at all levels of education, especially at the higher education level. The form of full face-to-face learning that was previously implemented before the pandemic, is gradually starting to be less applicable. Learning that was carried out one hundred percent online at the time of the pandemic, is now starting to not be implemented because it is considered less effective because it has limitations and can create the phenomenon of learning lost (Efriana, 2021). There are many limitations experienced when lectures are carried out fully online, so that after the pandemic began to end, the form of learning that was tried to be implemented in tertiary institutions was learning in a combination of face-to-face and online learning or often referred to as hybrid learning. Hybrid learning requires supporting facilities in its implementation, namely in the form of learning media

to facilitate student understanding in the lecture process. Referring to the background that has been discussed, learning media is a vital aspect in the process and achievement of learning objectives. Various types of learning media are growing over time. However, the treatment needs to be adjusted to the needs of the media users, both lecturers and students. In addition, situations and conditions also need to be taken into consideration in determining appropriate learning media to be applied, for example conditions during the previous pandemic and during the current post-pandemic. The aim of the research was to find out the need for instructional media both from the perspective of lecturers and students in science learning which is implemented in a hybrid mode at the university level.

2. Literature Review

2.1. Hybrid Learning

Hybrid learning or what can also be called blended learning is a combination of learning using e-learning with face-to-face learning methods or conventional methods (Jeffrey et. al., 2014). Hybrid learning or blended learning has a principle that is very easy to apply because it is a combination of conventional (synchronous) learning by combining internet-based learning (asynchronous) (Fauzan & Arifin, 2017). The combination of two learning methods or more aims to achieve predetermined learning goals (Hendrayati & Pamungkas, 2016). Some of the advantages of the hybrid learning model have been widely studied before. Hybrid learning or blended learning has certain advantages such as flexibility and comfort in the learning environment, affecting the improvement of learning, interest in learning, and social interaction (Ümit Yapici & Akbayin, 2012). Broadly speaking, hybrid learning provides convenience in the learning process, both delivery and access to teaching materials. In addition, it also saves and streamlines time.

2.2. Learning Science

Learning science at university cannot be separated from learning science in general. Science learning does not only focus on cognitive understanding, but also other aspects such as science as a product, science as process skills, science as an attitude, and science as technology (Dwianto et. al., 2017). Learning materials are certainly more complex, specific, and detailed compared to learning materials at the previous level. In university level, science learning has the goal of forming human resources that can solve the problems around them wisely (Quyet, 2022).

There is material that is abstract in nature and there is also material that is close to students' daily lives. Thus, in the learning process, the means to facilitate the delivery of abstract learning material information becomes more concrete.

2.3. Learning Media

Hybrid science learning at the university level provides challenges in its implementation. The combination of learning methods both real and virtual has implications for the learning process (Mekacher, 2022). The characteristics of science learning at the university level which aim to provide understanding to students so that they can wisely solve problems related to the environment and the natural surroundings are also a consideration in the learning process, especially in determining and applying learning media. Learning media as a means of conveying messages in learning is needed in the learning process. Learning media is important because it can improve students' abilities in the field (Helmi Azhar & Ghufron, 2022). Kustyarini et. al. (2020) states that learning media can attract students' interest in learning. Thus, it can be understood that the media has a positive impact on the learning process.

3. Methods

This research was conducted to find out the responses of lecturers and students to the need for science learning media in hybrid learning in tertiary institutions. Lecturer and student responses obtained are used as a basis for developing learning media that are effectively applied in science learning according to the needs of lecturers and students in lectures. In addition, the response data was also strengthened by the results of interviews with lecturers regarding the implementation of science learning in tertiary institutions after the COVID-19 pandemic ended.

The subjects of this study were 120 students at the Elementary School Teacher Education Study Program, Semarang State University, class of 2022 out of a total population of 200 students. The research sample was taken through the cluster random sampling technique. Cluster random sampling is a random sampling technique from several classes that are used as a population. In addition, all five lecturers teaching science courses were also the respondents in this study.

Data collection was carried out through non-test techniques. The non-test technique used is using a questionnaire with a Likert scale to obtain responses to data on the need for the development of science learning media in hybrid learning for both students and lecturers. The

instrument used is in the form of a questionnaire analyzing the needs of students and lecturers whose validity is determined through judgment experts. Research data were analyzed descriptively quantitatively by collecting data, summarizing, and analyzing to describe conditions and situations related to the development of science learning media in hybrid learning.

4. Findings and Discussion

The research results obtained consist of two data, namely lecturer response data and student response data from questionnaires that have been distributed at the beginning of the semester. For more details, the results of the study will be described in detail below. Based on the questionnaire that has been filled out by 5 lecturers at the Department of Elementary School Teacher Education, Semarang State University related to science learning carried out in a hybrid manner, the following data is presented on the results of the lecturers' responses in table 1.

Table 1: *Lecturer Responses to Hybrid Science Learning Needs Analysis*

Statements	Response (%)			
	4	3	2	1
Learning media in hybrid science learning is needed to make it easy for students to understand learning material.	40	60	0	0
Students have difficulty understanding science concepts if learning media is not used in hybrid learning.	60	40	0	0
Hybrid science learning that applies local culture-based learning makes it easier to understand science concepts.	40	60	0	0
Learning media that support science learning in a hybrid mode are technology-based learning media.	100	0	0	0
Lecturers need to develop science learning media based on Augmented Reality (AR) so they can explain material more realistically.	20	80	0	0

4 =Strongly agree, 3 = Agree, 2 = Disagree, 1 = Strongly disagree
(Source: Authors' Own Table)

Based on table 1, data is obtained that most lecturers who teach science courses agree that hybrid science learning requires learning media. Learning media serves to facilitate student understanding in lectures (Akmalia et. al., 2021; Cahya et. al., 2020). Understanding of teaching materials usually begins with student learning motivation. When student learning motivation is high, student understanding of teaching materials is also high (Hung et. al., 2019; Sartono et. al., 2022). This can be interpreted that learning media also functions to increase learning motivation. This is in line with Puspitarani's opinion which states that learning media can increase student learning motivation (Puspitarini & Hanif, 2019).

In the second statement, most lecturers strongly agree that students find it difficult to understand science learning in a hybrid mode if learning is not supported by adequate learning media. Hybrid learning that combines direct face-to-face with digital platforms requires supporting facilities in the form of appropriate learning media to achieve learning objectives (Li et. al., 2021). Learning process that does not utilize learning media will cause students to become less interested in the learning process so that this affects students' understanding in learning (Suryani, 2018). The use of learning media in hybrid learning has a positive impact on student learning activities and outcomes (Surjono et. al., 2017). Thus, it can be understood that learning media has a very important role in the hybrid science learning process.

Most lecturers agree with the statement that learning based on local wisdom in science learning in a hybrid mode makes it easier for students to understand learning material in third statement. The incorporation of cultural elements in learning is a form of applying contextual learning that is close to everyday life (Pang et. al., 2014). The application of contextual concepts in learning is part of meaningful learning. Meaningful learning makes it easier for students to understand learning concepts (Hsbollah & Hassan, 2022). Thus, hybrid science learning will be easy to implement if you try to connect teaching materials with everyday life.

The fourth statement was strongly agreed by the lecturer. Learning media that supports hybrid learning is technology-based learning media. Technology-based learning media is an effective medium applied in hybrid learning (Masalimova et al., 2021). There are several advantages of technology-based learning media because it can be used anytime, anywhere, and in any situation (Haleem et al., 2022). Technology-based learning media is an effective and efficient learning media (Patni & Dirgatama, 2021). This is in accordance with the characteristics of hybrid learning. In addition, current student digital literacy skills also support it, so that learning can run more effectively. Hybrid science learning should indeed be supported by technology-based learning media to achieve learning objectives optimally.

In the last statement, most lecturers agreed to develop learning media with augmented reality technology to support more realistic learning. This is in line with the previous question items related to technology-based learning media that support science learning in a hybrid mode. Learning media based on augmented reality technology can display teaching materials more realistically with 3D visualization technology supplemented with audio (Eriksen et al., 2020). Several previous studies also stated that learning media based on augmented reality can improve

learning outcomes because it displays phenomena realistically (Laurens et al., 2018). In addition, learning media based on augmented reality can also improve critical thinking skills and understand concepts (Tan et al., 2020).

In addition, to find out the need for developing appropriate learning media to be applied in science learning in a hybrid mode, the results of responses from 120 elementary school teacher education students consisting of 5 questions are explained in below.

Related to the first question about whether science learning media is needed to be implemented in a hybrid mode. 80 students (67%) said they strongly agreed that instructional media were needed in learning natural sciences which were implemented in a hybrid mode. Most students answered that they really needed learning media. The need for learning media is in accordance with the opinion of those who state that learning media is an important aspect of learning (Cahya et al., 2020). Ediyani et al., (2020) mentioned learning media as a means of delivering messages contained in teaching materials by lecturers to students. Thus, it can be understood that in science learning in a hybrid mode, relevant learning media is needed to support learning. Below are presented the results of student responses regarding the use of media in hybrid science learning in diagram 1.
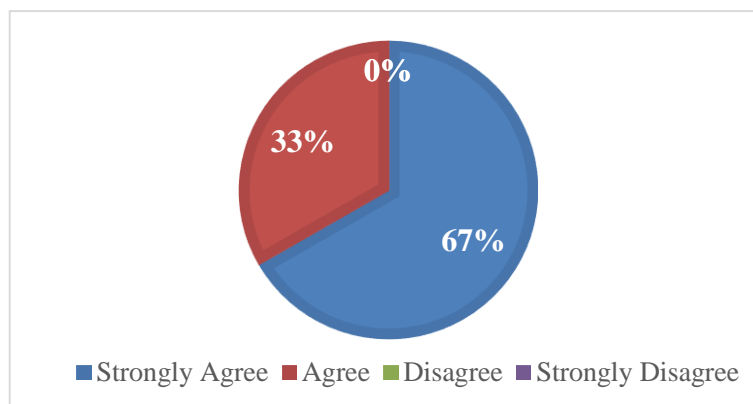

Diagram 1: *Response to Students' Needs for Media in Science Learning*
(Source: Authors' Own Illustration)

The second question is about the learning method applied in hybrid science learning. Based on diagram 2, information is obtained that of the three learning methods offered, most students (54%) or as many as 65 students choose independent learning methods supported by interactive learning media in hybrid science learning. When given a choice between learning explained by the lecturer in full, independent discussion, and independent learning with

assignments through interactive learning media, the results of responses from students are presented in diagram 2 below.
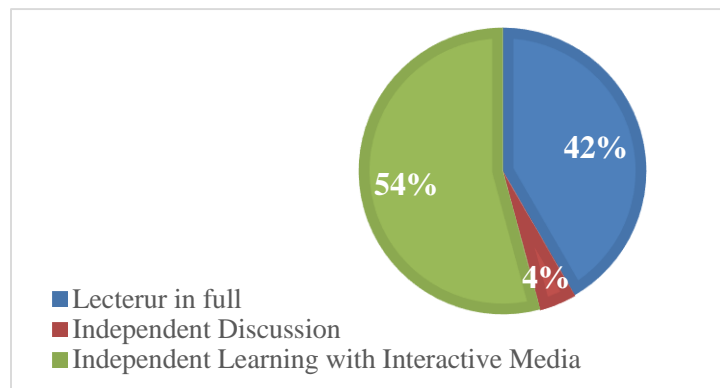

Diagram 2: *Students' Responses About Learning Method in Science Hybrid Learning*
(Source: Authors' Own Illustration)

The choice of student learning methods is in line with the characteristics of hybrid learning which emphasizes independence and is not dominated by excessive lectures by the lecturers who teach (Wahyuni, 2018). Learning that is carried out in a hybrid mode is a form of adaptation in the world of education from the impact of the pandemic that has occurred in the last two years (Sukiman et al., 2022). This form of learning is considered ideal because the learning process does not have to take place in the classroom but is flexible in nature which can be conditioned in unlimited space and time through the available technology platforms.

The type of learning media applied in science learning in a hybrid mode is the third question for students. Based on the responses that have been submitted, the results are presented in Diagram 3 below.
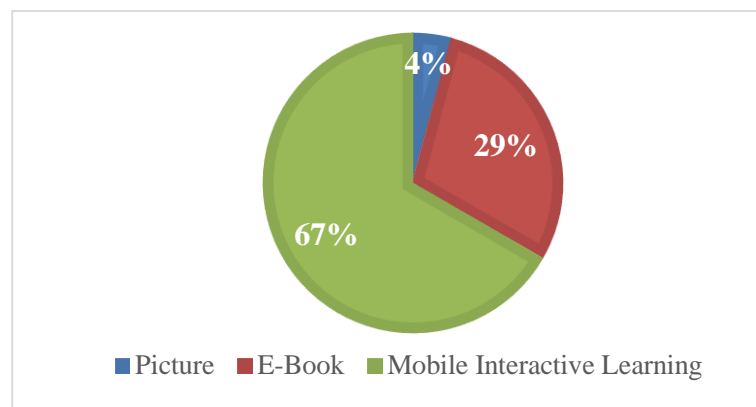

Diagram 3: *Students' Responses About Type Media in Science Hybrid Learning*
(Source: Authors' Own Illustration)

The results of students' responses to the third question regarding the type of learning media that was considered most appropriate by most students, 80 students (67%) chose to apply mobile interactive learning media in science learning. When compared to the other two types of media (picture and e-books), mobile interactive learning media has the advantage of being applied in hybrid science learning. The advantages of mobile interactive learning are related to affordability, portability, availability, and flexibility (Criollo-C et al., 2021). Mobile interactive learning as a technology-based learning medium is a learning media that strongly supports hybrid learning (Ustun, 2019). This happens because most students have been able to use smartphones as learning tools. In addition, several previous studies also stated that mobile interactive learning media can increase motivation and learning outcomes (Lin et al., 2017).

The next question is related to the material content in learning media. Should the material in learning media relate to the culture and daily life of students? Based on the results of the responses given by the students, 68 students (57%) from total of samples answered that they strongly agreed that the material content related to culture, and daily life is found in learning media that is applied in science learning in a hybrid mode. The following presents student responses related with questions about material content of learning media in diagram 4 below.
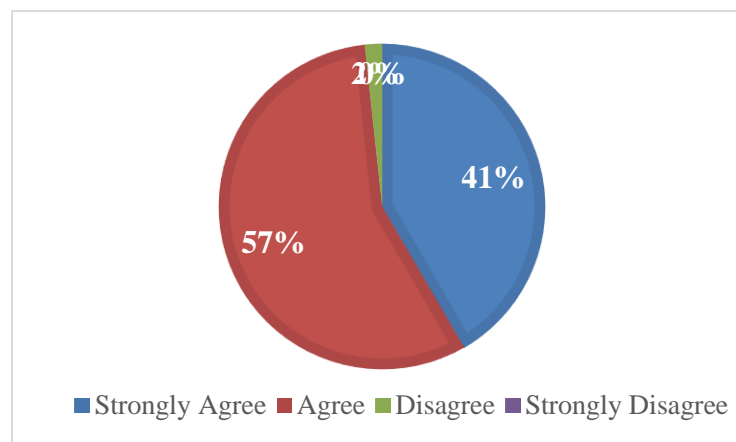

Diagram 4: *Students' Responses About Material Content Media*
(Source: Authors' Own Illustration)

Learning materials that are close to students' daily lives will facilitate student understanding in the learning process (Hariapsari et al., 2018). Learning materials that are close to phenomena and realities in the field are part of meaningful learning (Symeonidis & Schwarz, 2016). Meaningful learning is learning that can facilitate students to develop an understanding of

a material concept through the environment around them, so without the need to talk too much in the learning process because in the end it is the surrounding environment that can shape students' understanding of concepts either directly or indirectly.
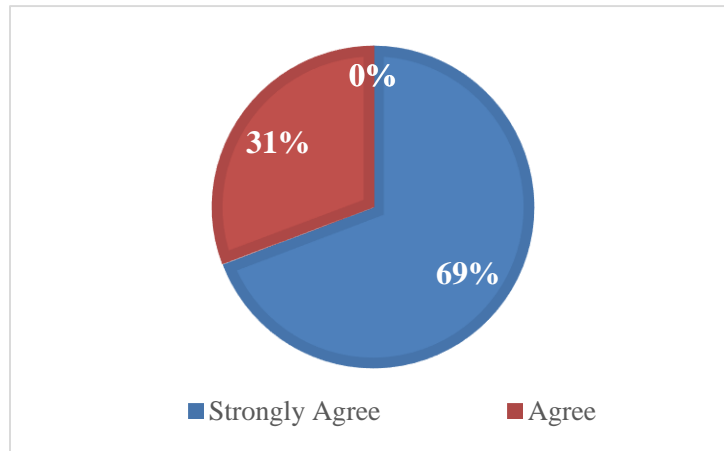

Diagram 5: *Students' Responses About AR Elements in Media*
(Source: Authors' Own Illustration)

On the last question related to the development of science learning media that contains technological elements that can make learning more real. In the following, Diagram 5 is presented to see the results of student responses from the questionnaire that has been given. Based on diagram 5, information can be obtained that 83 students (69%) choose learning media that contain elements that can present reality in learning. One technology that can present elements of reality is by integrating learning media with augmented reality technology. Augmented Reality (AR) is a new digital media that can combine the real with the virtual world (MacIntyre et al., 2001) (Mekacher, 2019). AR learning media also fulfils the benefits aspect to help students understand abstract material that is generally invisible but can be seen in the form of 3D (Ningrum et al., 2021) (Kollar, 2020). Vargas et al., 2020 states that learning media containing AR elements can increase learning motivation. Thus, it can be understood that in hybrid science learning it is necessary to develop technology-based learning media that contains contextual material elements equipped with AR technology to make it easier for students to understand the science concepts being studied.

4. Conclusion

Based on the findings and discussion previously described regarding the needs analysis for the development of science learning media in hybrid learning in tertiary institutions,

information was obtained from several lecturers and students. The findings from the survey given to lecturers show that learning media is one aspect of hybrid learning that is needed to support successful learning. Effective learning media contains contextual material to facilitate students' understanding. In addition, hybrid learning will be successful if it is supported by technology-based learning media that can display teaching materials realistically. On the other hand, the results of the student questionnaire show that they need technology-based learning media that contains material related to local culture and can display material more realistically in hybrid science learning. Thus, what can be recommended is the need to develop technology-based science learning media containing elements of local culture and augmented reality and virtual reality in hybrid learning at the university level. This research is only limited to obtaining data on the needs of science learning media in hybrid learning mode, so that in further research learning media can be developed according to the data obtained that can support science learning in hybrid learning mode.

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