ISSN No:-2456-2165

# The Effectiveness of Online Learning Media on the Learning Results of Biology for the Students of Negeri 20 Junior High School South Tangerang

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**Abstract:- Technological advancement offers numerous conveniences for mankind in attaining information within a relatively short period of time. The fulfillment of the need for information can be done more rapidly with the presence of the Internet. In relation to the statement, the internet benefits for education become manifested in the presence of learning media. Thus, in this context, the Internet serves as the medium for learning activities as a supplement, complement, or substitution. Hence, through the study, the researchers would like to identify the influence of online learning media management on the learning results of Biology. It is expected that through the study the students understand and become capable of operating the online learning media as an effective, efficient, paperless, and fun learning media. Specifically, throughout the conduct of the study, the researchers would like to analyze how effective the online learning media have been in influencing the learning results of Biology for the students of Negeri 20 Junior High School South Tangerang.**

**In conducting the study, the CMC theory has been adopted and the nature of the study itself is quantitative research using the ex-post-facto method. The study has been conducted at Negeri 20 Junior High School South Tangerang. The total number of the population in the study is 621 students, whereas the total number of subjects in the study is 90 students. All of the subjects are from Grade VII and Grade VIII of the given Junior High School and these subjects have been selected usingSimple Random Sampling. Then, the study involves two variables namely the independent variable (X) and the dependent variable (Y). The independent variable (X) in the study is the online learning media use while the dependent variable (Y) in the study is the learning results. The data in the study are gathered by using a questionnaire to describe the use of the online learning media for the subject Biology and document study to view the student's learning results. The study's trustworthiness rate is 95% while the significance rate (α) is 5%.**

**The mean score of the descriptive statistical analysis results on the use of learning media among the biology teachers is 83,735. This score falls into the "Moderate" category, which is 75,000 – 85,000. In the meantime, 29 (29%) teachers fall into the category "Low." On the contrary, the mean score of the descriptive statistical analysis results on the use of learning media among the students shows interesting results. 26 students (26%) fall into the category "Low" while 45 (45%) students fall into the category "High." With regards to the learning results of Biology, 21 students (21%) show a mean score 82,82, which falls into the interval 80,00 – 83,00 whereas 33 students (33%) fall into the category "Low" and 46 students (46%) fall into the category "High." The results of the inferential statistical analysis show the following statistical equation in the study $\hat{Y} = 79,79 + 0,037X$. Consequently, the hypothesis in the study is accepted and it can be concluded that the use of online learning media does not effectively influence the students' learning results of Biology.**

***Keywords:-*** *Effectiveness, Online Learning Media, Learning Results.*

## I. INTRODUCTION

Learning process can be conducted and manifested through numerous manners and one of these manners is related to the use of learning media. The statement implies that learning media becomes highly significant for the learning process. An engineer from the United States of America named B. Fuller (in Aristo Rahadi, 2003:2) states that media has been the "Third Parents" for the children after the teachers as the second parents. Hence, it is clear that the media has shown its prominence in assisting the teachers and the teaching staff to deliver learning messages so that these messages can be more immediately captured and understood by the students. Pertaining to the situation, the role of media becomes highly necessary in the learning process since its development highlights that media is no longer viewed as an aid but as an integral part of education and the learning system.

Technological advancement indeed offers various easiness for mankind in attaining information within a relatively short period. The fulfillment of human needs toward information becomes more rapid with the presence of the Internet. Thus, the development of new media has also become more rapid as it cannot be set apart from the rapid development of technology and globalization. The Internet as the basis of the new media has resulted in numerous social media platforms that can be accepted well by the wide and diverse Indonesian society (Budianto, 2020, p.1100). Then, one benefit of the Internet in the domain of education is its function as learning media. Specifically, the Internet has three functions in the domain of learning namely: (1) the Internet can serve as complementary materials; (2) the Internet can serve as supplementary

ISSN No:-2456-2165

materials; and (3) the Internet can serve as substitutionary materials. The Internet has become one of the alternatives that support learning activities.

Online learning media is one of the remote learning media forms that benefits the Internet so that the students can interact online. According to Arif S. Sadiman et al. (2003), the Association of Education and Communication Technology (AECT) in the United States of America defines media as all kinds of forms and channels that can be used by people for disseminating message or information. Thus, online learning media can be understood as a learning process that benefits information technology in the form of a computer equipped with communication facilities (the Internet, the intranet, and the extranet) and the multimedia facilities (graphic, audio, and video) as the main media in delivering the materials and the interaction between the teachers and the learners.

The implementation of a learning model demands several components that should be given attention so that the learning model can proceed continuously and deliver significant influence in the practice. These components are design, application/implementation, and management or maintenance. Pertaining to the learning process, the use of information technology in online media becomes necessary so that educators can be skillful in benefitting technology for creating their teaching materials. However, in order to achieve this end, there should be a design so that the teaching process can be conducted effectively. Within an instructional design, there is a process for guiding the actors to design, develop, and implement online media content by benefitting the infrastructure and the application of the available online media.

According to Bates & Wulf (1995), the advantages of using online learning media are: (1) improving the exchange interactivity; (2) offering time flexibility; (3) gaining the potential to reach a global audience; and (4) facilitating the content update as well as the achievable capabilities. Pertaining to its function as the support for the conventional learning method, there are several elements that the online learning media system contains and these elements are: (1) test items (the learning materials can be provided in the form of modules, the test items are available, and the results can be displayed; (2) communities (the learners can develop an online community in order to gain support and numerous information that are beneficial for each other); (3) online teachers (the teachers should stay online all the time in order to direct the learners, answer the questions, and assist the discussions); (4) cooperation opportunities (software is available for arranging the online meeting so that the learning process can be conducted in real-time manner without any space-related obstacle); and (5) multimedia (audio and video technology is used within the teaching materials delivery so that the learning interest of the students can be induced and the examples of such technology are phone, voice mail, telephone, radio, audio, television, videotape, video text, and video messaging).

Based on the results of a study from the curriculum center, it is found that lecturing by means of writing over the blackboard or the whiteboard has been the method frequently employed by teachers. Consequently, the learning materials in the school become considered part of memorization and this has led the students unable to master the concepts. Thus, the implementation of a learning process that engages the students more needs to be devised immediately.

Therefore, all elements within the competency of teachers tend to position students on the basis of experience, capacity, knowledge, and learning sources that teachers have; in brief, the measurement of the students' potentials and capacities is only based on the mind of the teachers whereas this kind of measurement is no longer relevant (compared to Depdikbud, 2003). In the reality, in the dynamic digital era, teachers should implement multi-channel learning that positions students as dynamic learners who can learn from anywhere at any time from anyone and any learning resources. In this regard, teachers should serve as facilitators who display the competencies that the students should master and open the opportunities for the students to learn from numerous digital learning resources in the global world.

The results of the latest study show that more Indonesian learners use technology in their classrooms compared to learners from other countries, including the ones from more advanced countries. A study by the prominent educational institution, Cambridge International, part of Cambridge University in England, has found that Indonesian learners have used technology more frequently in their classroom and their frequent use of technology has defeated that of learners from more advanced countries. Indeed, Indonesian learners have occupied the first position in computer laboratory use (40.00%) on the global scale. At the same time, Indonesian learners have also occupied second place in desktop computer use in the classroom (54.00%) while the first position is occupied by learners from the United States of America. In another occasion, more than two-thirds of Indonesian learners (67.00%) have used smartphones in their classroom and there are even more students who use their smartphones for completing their homework (81.00%).

Departing from these data, it can be concluded that Indonesian learners have been technology-literate and able to start benefiting from the existing technology of online learning media such as Kahoot!, Skype, Appear.in, Google Classroom, Google Hangouts, and alike. Kahoot! is a free learning-based game platform that serves as educational technology. Launched in 2003 in Norway, Kahoot! Has been played by more than 50 million people throughout 180 countries. Kahoot! has been designed for the social learning process with the learning participants gathering themselves before the screen that serves as an interactive board or computer monitor in front of the classroom.

Despite the above findings, the educational process implemented by the schools in Indonesia has often suffered from new issues, especially in the learning process of Biology that tackles the discussion of human cells. The teaching-learning process should often deal with abstract materials that go beyond the students' experience in their daily life, especially with regard to human cells. As a result, the learning materials of human cells become difficult to be taught by teachers and to be understood by students. Pertaining to this issue, visualization can be one of the methods that can be implemented for making something abstract concrete. The visualization that has often been applied in the teaching-learning process is a two-dimensional model and a three-dimensional model. From this illustration, it can be seen that the media with effective animation can be one of the alternatives for improving the mastery of abstract materials among students (Dimyati, 2002, p.7).

Based on the observation results in Negeri 20 Public Junior High School South Tangerang by the researchers and the interview results with the Biology Teachers for Grade VII, several problems have been found to be obstacles in the learning process within the classroom. Then, the problems that often occur in the classroom are: (1) low learning motivation among the students; (2) lack of activeness among the students; (3) absence of interest in the learning materials, especially the abstract ones from Biology, among the students; and (4) tendency to be passive during the learning process among the students. These situations potentially lead to satiety, boredom, and decreasing learning interest and motivation among the students. The researchers view that the context of Biology in junior high school degrees has extremely wide coverage in science. All living organisms can be explored into complex knowledge, such as human reproduction so that the students can gain deeper observation and understanding of Biology.

The above issues can definitely influence the learning results of the students, especially the ones from Negeri 20 Junior High School South Tangerang, since every learning process leads to the objectives that have been expected as the learning results. However, in reality, the learning results sometimes describe temporary knowledge, which will soon be forgotten. Consequently, the achievement of the students' learning results has been under the minimum passing grade at the end of each learning evaluation. As a response, the teachers should conduct remedial learning toward each basic competence.

The low learning motivation has not only been caused by internal factors but also external factors among the students. These external factors are related to the learning environment of the students, especially in the classroom. If the learning process does not motivate the students, then it will be clear that the students do not have any learning interest at all. Looking at the condition, teachers definitely need learning media that hold the capability to create fun and interesting learning conditions so that learning motivation can be developed among the students. In other words, the use of technology is possible to draw the learning motivation of the students so that the students can maintain and improve their learning enthusiasm. In this regard, learning motivation becomes the motor that activates the students to engage themselves in the learning process at any time and any place. By doing so, when the students display high learning motivation, they will actively engage themselves in the learning process. In the case of Natural Science learning process, specifically Biology, the appropriate learning strategies become highly necessary in order to engage the students both intellectually and emotionally under the optimum rate since Biology puts emphasis on process skills.

Departing from the above explanation, the researchers are interested to conduct a study on the effectiveness of online learning media use in Biology for the students of Negeri 20 Public Junior High School South Tangerang. Through the study, the researchers would like to deliver class action in order to improve the learning strategies that can engage the students actively so that the students can improve their learning motivation and learning results in Biology.

## II. CMC THEORY

Computer-Mediated Communication (CMC) involves information trading in various textual, audio, and video formats that are transmitted by means of computer and communication technology. CMC has been tentatively defined as symbolic text-based human interaction performed through or facilitated by digital-based technology such as the Internet, cellphone text messages, instant messages, e-mails, and alike (Spitzberg, 2006). The communication that has been mediated by computers can be viewed from individual factors such as knowledge, motivation, and skills. Then, from the situation variables, the communication can be viewed from media, message, and context (Spitzberg, 2006). Many studies on the CMC have focused on the technological and media impact whereas these studies have paid less attention to the social dimension of the related variables. These studies are mainly related to how CMC competencies are related to the students' learning achievement with lecturers' creativity as the moderating variable. For example, one of these studies has found that online learning can display the creativity of a lecturer at a university (Di et al., 2020).

As an alternative, computer-mediated communication (CMC) can be defined a name given to a large group of functions that make use of computer for supporting the human communication. CMC thus refers to the computer application for performing direct interindividual communication and this includes the use of e-mail, conference, and system that facilitates the interactive communication between teachers and students. Encouraged by the pandemic, CMC in education has become a necessity. One of the most significant benefits that CMC has is that CMC has the capacity to release instruction from limited time and space. Through the replacement of the direct face-to-face meeting, the overall learning activities, including the practical sessions, can be performed online via computer application in order to transfer, store, and fetch information among people (lecturers and university students) as the tool

ISSN No:-2456-2165

for supporting the instructional activities. The use of CMC delivers a change of paradigm in the domain of teaching and learning activities, including the shift from instructor-centered education to student-centered education and informal dialogue integration-centered education.

CMC competence theory can bridge at least several differences among the CMC theories that have been developed by previous researchers. Then, the competence in CMC can be positioned in the context of computer literacy. In the all-digital era, it is quite difficult to avoid the assumption that the effective use of computer technology becomes more associated with the competencies in interpersonal communication and intergroup communication that have been facilitated by the computer. It should be emphasized that the development of interactive skills within the communication environment that has been mediated by the computer aims at pursuing more systematic education in order to improve the CMC competence in both academic and professional domains. Therefore, a comprehensive approach is necessary in order to explain the competent communicative interaction in numerous arrangements that are technologically mediated (Bubas et al., 2003).

## III. LEARNING MEDIA CONCEPT

The term media has been derived from the Latin language medius, which literally means middle, intermediary, or messenger (Arsyad, Azhar, 2005, p.3). In line with the statement, Prastati & Irawan (2005, p.3) argue that media refers to anything that can deliver information from the source to the target. Furthermore, Latuheru (1988, p.14) argues that learning media refers to materials, tools, and methods/techniques that can be used in the teaching-learning activities in order that the educational communicative interaction between the teachers and the students/learning participants can take place effectively and efficiently. Similarly, Gerlach & Ely as having been quoted by Arsyad Azhar (2005, p.3) state that in general media can be understood as individuals, materials, or events that develop the conditions that provide the students with knowledge, skills, or attitude. On the contrary, according to Gagne in Sadiman et al. (2005, p.3) media refers to various kinds of components that can stimulate the students to learn from their environment. National Education Association (NEA) similarly defines media as the form of both printed and audio-visual communication complete with the tools; consequently, media can be manipulated, viewed, heard, or read (Sadiman et al., 2005, p.7).

Departing from these definitions, it can be concluded that learning media refers to both the hardware (all objects that can be heard, viewed, and touched using all of the five senses) and the software (the content of the message that will be achieved) that can be used for delivering message/information from the transmitter to the receiver by individuals or small-scale/large-scale groups within the learning process.

## IV. METHOD

The paradigm that has been adopted in the study is postpositivism, which holistically views the aspects of social reality as a natural unity that should be given in-depth interpretation especially if the social reality is understood as plural realities (Hendrarso in Suyanto & Sutinah, 2005). Then, the study is conducted in Negeri 20 Public Junior High School City of South Tangerang. The independent (X) variable in the study is the Online Learning Media of Biology Teachers, whereas the dependent (Y) variable in the study is the Learning Results. The population in the study is all students from Negeri 20 Public Junior High School City of South Tangerang (621 people in total). According to Arikunto (2006, p.109), if the population is less than 100 people then the overall population may be selected as the sample of the study but if the population is more than 100 people then 10-15% or 20-25% of the overall population may be selected as the samples of the study. Therefore, referring to the statement, the researchers would only select 20% of the total population as the sample of the study and, at the same time, the researchers will exclude the population from Grade IX students because these students have undergone the national examination. Thus, the total population of the Grade VII students and the Grade VIII students is 410 people and, thus, the sample that has been selected from the total population figure is 90 people. The sample composition is presented in Table 1 below.

In conducting the study, the researchers implemented statistical proportional sampling, specifically random sampling. The random sampling technique refers to the activities of gathering samples that have proportional measures in comparison to the total population. The technique has been implemented because the current study demands empirical data and the empirical data can only be retrieved through the appropriate instrument and data-gathering technique. In other words, the research instrument can define the research quality by itself (Sanjaya, 2013, p. 247). The success of a study is mostly defined by the research instrument as a set of tools operated by a researcher in order to gather the data or the information pertaining to the problem under investigation. In light of the study, the research instrument serves as an aid for the researchers in gathering the data.

| Grade | Number of Students |
|---|---|
| VII | 43 |
| VIII | 47 |
| IX | 0 |
| | ∑ = 90 |

Table 1: Sample Figure

Source: Data Processing by Researchers

Consequently, the instrument that should be deployed in the study is documentation. Documentation refers to the data gathering technique that involves the activities of collecting and analyzing documents that can be in the form of written documents, pictures, and electronic documents. In the context of the current study, the documentation technique is used in order to gather the data on the profile of

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the school, the name and the number of the students, the score in Natural Science, and the students' learning results in Biology. In addition to the documentation, the researchers also deploy questionnaires as another data-gathering technique in the study. A questionnaire refers to a set of written statements that are used for gathering information from the respondents pertaining to their personal reports or knowledge by ticking or crossing the given statements. In the study, the questionnaire offers 4 indicators that are broken down into 32 questions and all of these questions deal with the discussion on the use of learning media in the learning process. The research instrument in the study has been validated by two experts, namely the Lecture of Mathematics from Mercu Buana University and the Teacher of Biology from a Public Junior High School. The indicators of the learning results and the questionnaire that have been gathered from the students can be seen in Table 2 below.

| No | Variable | Indicators | Contents | QUESTION | |
|---|---|---|---|---|---|
| | | | | POSITIVE | NEGATIVE |
| 1. | Media Use | 1. Audio Media | a. Tape recorder or voice recorder | 1 | 2 |
| | | | b. Audio PPT slide | 3 | 4 |
| | | 2. Visual Media | a. Picture | 5 | 6 |
| | | | b. Poster | 7 | 8 |
| | | | c. Map | 9 | 10 |
| | | | d. Graphic and chart | 11 | 12 |
| | | | e. Bulletin board | 13 | 14 |
| | | | f. Slide | 15 | 16 |
| | | 3. Audiovisual Media | a. Video | 17 | 18 |
| | | | b. Youtube | 19 | 20 |
| | | | c. Computer | 21 | 22 |
| | | | d. Film | 23 | 24 |
| | | 4. Printed Media | a. Newspaper or online news | 25 | 26 |
| | | | b. Textbook | 27 | 28 |
| | | | c. Module | 29 | 30 |
| | | | d. Magazine | 31 | 32 |

Table 2: Guidelines of Learning Media Use Questionnaire

Source: Data Processing by Researchers

Furthermore, the researchers have adopted the Likert scale into the scoring system of the questionnaire by setting four alternatives. The answer to each instrument with the use of Likert scale has shown sufficient gradation from positive to negative orientation. The scoring is explained further in Table 3 below.

| No | Alternative | Favorable Score | Unfavorable Score |
|---|---|---|---|
| 1 | Always | 4 | 1 |
| 2 | Often | 3 | 2 |
| 3 | Sometimes | 2 | 3 |
| 4 | Never | 1 | 4 |

Table 3: The Score of the Answer to Each Item

## V. DISCUSSIONS

The data on the students' learning interests have been gathered by using a 32-item questionnaire. The questionnaire should be completed by the students who have attended the Biology subject in Negeri 20 Public Junior High School City of South Tangerang. In total, the data on the students' learning interest have been gathered from 90 students in Grade VII and VIII. The overall data can be seen in Table 4 below.

| No. | The Score of Learning Media Use |
|---|---|
| 1 | 68 |
| 2 | 107 |
| 3 | 107 |
| 4 | 90 |
| 5 | 84 |
| 6 | 109 |
| 7 | 91 |
| 8 | 91 |
| 9 | 91 |
| 10 | 100 |

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| No. | The Score of Learning Media Use |
|---|---|
| 11 | 117 |
| 12 | 75 |
| 13 | 96 |
| 14 | 106 |
| 15 | 97 |
| 16 | 80 |
| 17 | 93 |
| 18 | 83 |
| 19 | 42 |
| 20 | 83 |
| 21 | 89 |
| 22 | 43 |
| 23 | 84 |
| 24 | 78 |
| 25 | 69 |
| 26 | 100 |
| 27 | 76 |
| 28 | 86 |
| 29 | 71 |
| 30 | 88 |
| 31 | 83 |
| 32 | 79 |
| 33 | 95 |
| 34 | 77 |
| 35 | 78 |
| 36 | 86 |
| 37 | 79 |
| 38 | 65 |
| 39 | 95 |
| 40 | 99 |
| 41 | 73 |
| 42 | 58 |
| 43 | 95 |
| 44 | 80 |
| 45 | 82 |
| 46 | 73 |
| 47 | 128 |
| 48 | 101 |
| 49 | 78 |
| 50 | 68 |
| 51 | 69 |
| 52 | 74 |
| 53 | 76 |
| 54 | 78 |
| 55 | 78 |
| 56 | 82 |
| 57 | 67 |
| 58 | 84 |
| 59 | 90 |
| 60 | 78 |
| 61 | 47 |
| 62 | 48 |
| 63 | 85 |
| 64 | 99 |
| 65 | 94 |
| 66 | 76 |
| 67 | 56 |
| 68 | 68 |

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| No. | The Score of Learning Media Use |
|---|---|
| 69 | 94 |
| 70 | 113 |
| 71 | 99 |
| 72 | 89 |
| 73 | 53 |
| 74 | 87 |
| 75 | 78 |
| 76 | 92 |
| 77 | 66 |
| 78 | 64 |
| 79 | 85 |
| 80 | 106 |
| 81 | 106 |
| 82 | 99 |
| 83 | 60 |
| 84 | 97 |
| 85 | 76 |
| 86 | 93 |
| 87 | 85 |
| 88 | 53 |
| 89 | 72 |
| 90 | 93 |
| 91 | 69 |
| 92 | 102 |
| 93 | 104 |
| 94 | 76 |
| 95 | 108 |
| 96 | 62 |
| 97 | 62 |
| 98 | 107 |
| 99 | 107 |
| 100 | 107 |

Table 4: The Score of the Learning Media Use

Source: Questionnaire Data Processing Results (2022)

*A. The Descriptive Statistics of the Learning Media Use*

| Interval | Fi | Xi | $Xi^2$ | Fi.Xi | $Fi.Xi^2$ |
|---|---|---|---|---|---|
| 42 – 52 | 4 | 47 | 2209.00 | 188.00 | 8836.00 |
| 53 – 63 | 7 | 58 | 3364.00 | 406.00 | 23548.00 |
| 64 – 74 | 15 | 69 | 4761.00 | 1035.00 | 71415.00 |
| 75 – 85 | 29 | 80 | 6400.00 | 2320.00 | 185600.00 |
| 86 – 96 | 21 | 91 | 8281.00 | 1911.00 | 173901.00 |
| 97 – 107 | 19 | 102 | 10404.00 | 1938.00 | 197676.00 |
| 108 – 118 | 4 | 113 | 12769.00 | 452.00 | 51076.00 |
| 119 – 129 | 1 | 124 | 15252.25 | 123.50 | 15252.25 |
| Total | 100 | 684 | 63440.25 | 8373.50 | 727304.25 |

Table 5: The Mean Score of the Learning Media Use

Source: Questionnaire Data Processing Results (2022)

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| Interval | Fi | Percentage | Total Percentage | Learning Media Category |
|---|---|---|---|---|
| 42 - 52 | 4 | 0.04 | 0.26 | Low |
| 53 - 63 | 7 | 0.07 | | |
| 64 - 74 | 15 | 0.15 | | |
| 75 - 85 | 29 | 0.29 | 0.29 | Moderate |
| 86 - 96 | 21 | 0.21 | 0.45 | Effective |
| 97 - 107 | 19 | 0.19 | | |
| 108 - 118 | 4 | 0.04 | | |
| 119 - 129 | 1 | 0.01 | | |
| Total | 100 | | 1.00 | |

Table 6: Frequency Distribution and Learning Media Use Score

Source: Questionnaire Data Processing Results (2022)

The results of descriptive statistical analysis for the learning media use show that the mean score is 83.735, which belongs to the interval 75 – 85 with the "Moderate" category. Then, the percentage of learning media use among the students is 0.29 or 29% with 29 students. This figure asserts that the learning media use among the students belongs to the "Moderate" category. In the meantime, the percentage of learning media use that belongs to the "Low" category (below the mean score) among the students is 0.26 or 26% with 26 students whereas the percentage of learning media use that belongs to the "High" category (above the mean score) is 0.45 or 45% with 45 students.

*B. The Score of Learning Results from the Students of Negeri 20 Public Junior High School City of South Tangerang*

*The score of the learning results from the students of Negeri 20 Public Junior High School City of South Tangerang can be* seen in Table 7 below.

| No. | The Score of the Students' Learning Results |
|---|---|
| 1 | 65 |
| 2 | 67 |
| 3 | 70 |
| 4 | 87 |
| 5 | 86 |
| 6 | 80 |
| 7 | 65 |
| 8 | 89 |
| 9 | 82 |
| 10 | 97 |
| 11 | 90 |
| 12 | 95 |
| 13 | 85 |
| 14 | 91 |
| 15 | 90 |
| 16 | 88 |
| 17 | 83 |
| 18 | 84 |
| 19 | 75 |
| 20 | 70 |
| 21 | 83 |
| 22 | 94 |
| 23 | 90 |
| 24 | 65 |
| 25 | 69 |
| 26 | 78 |
| 27 | 74 |
| 28 | 80 |
| 29 | 86 |
| 30 | 90 |
| 31 | 80 |
| 32 | 82 |
| 33 | 98 |

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| No. | The Score of the Students' Learning Results |
|---|---|
| 34 | 87 |
| 35 | 76 |
| 36 | 80 |
| 37 | 94 |
| 38 | 98 |
| 39 | 96 |
| 40 | 90 |
| 41 | 91 |
| 42 | 87 |
| 43 | 82 |
| 44 | 76 |
| 45 | 73 |
| 46 | 64 |
| 47 | 68 |
| 48 | 90 |
| 49 | 78 |
| 50 | 75 |
| 51 | 77 |
| 52 | 89 |
| 53 | 90 |
| 54 | 82 |
| 55 | 89 |
| 56 | 90 |
| 57 | 76 |
| 58 | 78 |
| 59 | 83 |
| 60 | 88 |
| 61 | 80 |
| 62 | 89 |
| 63 | 86 |
| 64 | 73 |
| 65 | 75 |
| 66 | 79 |
| 67 | 77 |
| 68 | 80 |
| 69 | 96 |
| 70 | 98 |
| 71 | 87 |
| 72 | 68 |
| 73 | 71 |
| 74 | 82 |
| 75 | 90 |
| 76 | 95 |
| 77 | 83 |
| 78 | 90 |
| 79 | 74 |
| 80 | 79 |
| 81 | 89 |
| 82 | 94 |
| 83 | 92 |
| 84 | 97 |
| 85 | 85 |
| 86 | 87 |
| 87 | 98 |
| 88 | 69 |
| 89 | 79 |
| 90 | 80 |
| 91 | 81 |

| No. | The Score of the Students' Learning Results |
|---|---|
| 92 | 78 |
| 93 | 79 |
| 94 | 80 |
| 95 | 81 |
| 96 | 83 |
| 97 | 88 |
| 98 | 80 |
| 99 | 87 |
| 100 | 76 |

Table 7: The Score of the Students' Learning Results

Source: Questionnaire Data Processing Results (2022)

*C. The Descriptive Statistical Analysis of the Students' Learning Results*

| Interval | Fi | Xi | $Xi^2$ | Fi.Xi | $Fi.Xi^2$ |
|---|---|---|---|---|---|
| 64 - 67 | 5 | 65.50 | 4290.25 | 327.50 | 21451.25 |
| 68 - 71 | 7 | 69.50 | 4830.25 | 486.50 | 33811.75 |
| 72 - 75 | 7 | 73.50 | 5402.25 | 514.50 | 37815.75 |
| 76 - 79 | 14 | 77.50 | 6006.25 | 1085.00 | 84087.50 |
| 80 - 83 | 21 | 81.50 | 6642.25 | 1711.50 | 139487.25 |
| 84 - 87 | 12 | 85.50 | 7310.25 | 1026.00 | 87723.00 |
| 88 - 91 | 20 | 89.50 | 8010.25 | 1790.00 | 160205.00 |
| 92 - 95 | 6 | 93.50 | 8742.25 | 561.00 | 52453.5.0 |
| 96 - 99 | 8 | 97.50 | 9506.25 | 780.00 | 76050.00 |
| Total | 100 | 733.50 | 60740.25 | 8282.00 | 693085.00 |

Table 8: The Mean Score of the Students' Learning Results

Source: Questionnaire Data Processing Results (2022)

| Interval | Fi | Percentage | Total Percentage | Learning Media Category |
|---|---|---|---|---|
| 64 – 67 | 5 | 0.05 | 0.33 | Low |
| 68 – 71 | 7 | 0.07 | | |
| 72 – 75 | 7 | 0.07 | | |
| 76 – 79 | 14 | 0.14 | | |
| 80 – 83 | 21 | 0.21 | 0.21 | Moderate |
| 84 – 87 | 12 | 0.12 | 0.46 | High |
| 88 – 91 | 20 | 0.20 | | |
| 92 – 95 | 6 | 0.06 | | |
| 96 – 99 | 8 | 0.08 | | |
| Total | 100 | | 1.00 | |

Table 9: Frequency Distribution and Learning Result Score

Source: Questionnaire Data Processing Results (2022)

The results of descriptive statistical analysis on the students' learning result score show that the mean score is 82.82 which belongs to the interval 80 – 83 with total 21 students or 21%. Then, the percentage of the students' learning result score that belongs to the "Low" category is 0.33 or 33% with total 33 students while the percentage of the students' learning result score that belongs to the "High" category is 0.46 or 46% with total 46 sudents.

*D. Normality Test*

The normality test intends to make sure whether the data that have been used are normally distributed or not. In the study, the normality test is conducted by using SPSS For Windows Version 26 software with the Kolmogorov-Smirnov method. The method has been frequently used especially after the release of numerous statistical programs. Then, the normality test in the study is conducted in order to test the variables from the learning media use and the learning results. According to the Kolmogorov-Smirnov method, if the Sig. value is lower than 0.05 it means that the data within the test hold significant differences from the standardized normal data or the data are not normally distributed; on the contrary, if the Sig. value is higher than 0.05 then it means that the data within the test do not hold

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significant differences from the standardized normal data or the data are normally distributed. The results of the normality test can be seen in Table 10 below.

**One-Sample Kolmogorov-Smirnov Test**

| | | Unstandardized Residual |
|---|---|---|
| N | | 100 |
| Normal Parameters[a,b] | Mean | .0000000 |
| | Std. Deviation | 8.59872373 |
| Most Extreme Differences | Absolute | .072 |
| | Positive | .041 |
| | Negative | -.072 |
| Test Statistic | | .072 |
| Asymp. Sig. (2-tailed) | | .200[c,d] |

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.

Table 10: Normality Test

Source: Questionnaire Data Processing Results (2022)

Based on the normality test using the Kolmogorov-Smirnov method, it is found that the Sig. value is 0.20, which is higher than 0.05. As a result, the residual scores are normally distributed and therefore the test can proceed to the regression analysis.

*E. Linearity Test*

From the results of the ANOVA test for the data linearity, the significance value or the probability value that has been attained is 0.549. Since this value is higher than 0.050, it can be concluded that the relationship between the X variable and the Y variable is linear.

**ANOVA Table**

| | | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|---|
| Learning Results*Learning Media | Between Groups | (combined) | 3785.443 | 52 | 72.797 | .957 | .562 |
| | | Linearity | 39.133 | 1 | 39.133 | .515 | .477 |
| | | Deviation from Linearity | 3746.310 | 51 | 73.457 | .966 | .549 |
| | Within Groups | | 3573.557 | 47 | 76.033 | | |
| | Total | | 7359.000 | 99 | | | |

Table 11: Linearity Test Results

Source: Questionnaire Data Processing Results (2022)

*F. Correlation Test*

The correlation test is conducted by using IBM Statistics 26 through analysis of the relationship between the Learning Media (X) and the Learning Results (Y). The results of the correlation test between the X variable and the Y variable can be seen in Table12 below.

| | | Learning Media | Learning Results |
|---|---|---|---|
| Learning Media | Pearson Correlation | 1 | .073 |
| | Sig. (2-tailed) | | .471 |
| | N | 100 | 100 |
| Learning Results | Pearson Correlation | .073 | 1 |
| | Sig. (2-tailed) | .471 | |
| | N | 100 | 100 |

Table 12: Correlation Test

Source: Questionnaire Data Processing Results (2022)

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Based on the results of the correlation test above, it is apparent that the correlation between Learning Media (X) and Learning Results (Y) is 0.073 or 7.30%. Thus, it can be concluded that the relationship between Learning Media and Learning Results are significantly low.

*G. Regression Test*

The regression test is conducted by analyzing the influence of Learning Media (X) against Learning Results (Y). The results of the regression test can be seen in Table 13 below.

**Model Summary[b]**

| Model | R | R-Square | Adjusted R-Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .073[a] | .005 | -.005 | 8.642 |

Table 13: Model Summary

Source: Questionnaire Data Processing Results (2022)

a. Predictors: (Constant) Learning Media
b. Dependent Variable: Learning Results

Departing from the results of the regression test in Table 13 above, it is apparent that the causal relationship between Learning Media (X) and Learning Results (Y) is 0.05 or 5%. Thus, it can be interpreted that Learning Media has an influence over Learning Results for 5% while the remaining 95% of the influence over the relationship between the two factors or the other causal relationship can be explained by the factors that have nto been included in the study.

*H. ANOVA Test*

The results of the ANOVA test toward the causal relationship between Learning Media and Learning Results can be seen in Table 14 below.

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 39.133 | 1 | 39.133 | .524 | .471[b] |
| | Residual | 7319.867 | 98 | 74.693 | | |
| | Total | 7359.000 | 99 | | | |

Table 14: ANOVA Test Results

Source: Questionnaire Data Processing Results (2022)

a. Predictors: (Constant) Learning Media
b. Dependent Variable: Learning Results

Based on the results of ANOVA test in Table 14 above, it is found that the F-value is 0.523 and the significance value of the causal relationship between Learning Media and Learning Results is 0.471. The significance value 0.471 implies that the significance value has been higher than the probability value that can be accepted namely 0.050. Thus, it can be interpreted that the regression model cannot be operated for predicting the dependent variable

*I. Coefficient of Regression Test*

The coefficient of regression test for the causal relationship between Learning Media and Learning Results can be seen in Table 15 below.

| Model | | Unstandardized B | Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | Constant | 79.798 | 4.372 | | 18.250 | .000 |
| | Learning Media | .037 | .051 | .073 | .724 | .471 |

Table 15: Coefficient of Regression Results

Source: Questionnaire Data Processing Results (2022)

a. Predictors: (Constant) Learning Media

Based on the results of the coefficient regression test that has been conducted, the coefficient results for the formulation of simple linear regression can be attained.

*J. The Influence of the Online Learning Media Use by the Teachers to the Learning Results of the Students from Negeri 20 Public Junior High School City of South Tangerang*

Through the discussion in this section, the researchers would like to solve the third problem formulation namely whether there has been an influence from the learning media use by the teachers to the learning results of Biology among

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the students from Negeri 20 Public Junior High School City of South Tangerang. In this section, the type of analysis that has been used is the inferential statistical analysis so that the governing inference for greater population can be drawn. Then, the inferential statistical analysis is conducted by performing the hypothesis test in the first place through the conduct of normality test, homogeneity test, linearity test, correlation analysis test, linear regression test, and coefficienf o regression significance test. The hypothesis test itself has been previously formulated in the study. Afterward, from the inferential statistical analysis, the researchers attain the following linear regression: $\hat{Y} = a + bX$. Hence, the statistical equation that has been attained in the current study is $\hat{Y} = 79.79 + 0.037X$. It can be implied that every insignificant use of learning media will result in 0.037 improvements on the learning results.

For example, if the online learning media use score by the teachers is 80.000 then the learning results that will be attained is 8.003. with the correlation coefficient of 0.037, it is clear that there is a low relationship between the two variables in the test namely online learning media use as the independent variable and learning results as the dependent variable. After the correlation coefficient has been attained, the correlation significance should be tested. It should be understood that the score of 0.037 does not imply the size of the intended correlation; instead, the score of 0.037 shows the direction of the correlation between the variables in the test. The positive direction of the correlation shows linear and unidirectional correlation. Hence, if variable X improves then variable Y will also improve. Furthermore, the t-count value that has been attained in the study is 1.454 and the score should be compared to the t-table value namely 3.089. So, it is apparent that the t-count value is lower than the t-table value (t-count < t-table).

Therefore, the decision to conduct the test in the study does not have a significant influence on the online learning media use by the teachers toward the learning results of Biology. Despite the statement, the presence of the influence in the correlation between online learning media use by the teachers and learning results of the students is caused by the fact that several media does not have any significance related to the use during the Covid-19 pandemic. As a result, the learning media that have been used are ineffective and, in fact, are not affected by the students in the Negeri 20 Public Junior High School City of South Tangerang.

During the Covid-19 pandemic, the learning process conduct can be directed and be realized through multiple manners and one of these manners is using the learning media. The learning context delivered by the teachers of Negeri 20 Public Junior High School City of South Tangerang to their students has resulted in a new experience of using online learning media since learning media are highly important in the learning process. Technological advancement offers numerous easiness for mankind in attaining information within a relatively short period of time. The fulfillment of human needs toward information becomes faster with the presence of the Internet.

Technological advancement becomes more perceived with the presence of Computer-Mediated Communication (CMC) which involves information-trading activities in numerous textual, audio, and video formats transmitted *by means of* computer technology and communication. Specific to the context of the study, Computer-Mediated Communication is able to facilitate the learning process through the Internet, cellphone texts, instant messages, e-mails, and alike (Spitzberg, 2006). Consequently, the learning process becomes easier to conduct and is able to be realized in a more concrete manner from the elementary school degree to the university degree. Unfortunately, in the context of Biology, the situation becomes different since online learning media does not have significant influence over the learning results of the students in the subject. Indeed, there are several factors that cause the influence of online learning media on the learning results of Biology among the students of Negeri 20 Public Junior High School City of South Tangerang insignificant.

Biology guides the students to master the theoretical materials but also the practical materials in the laboratory. Therefore, if the students are only taught Biology through the use of online learning media then the learning process will be ineffective and this will affect the learning results of the students. The ineffective use of learning media against the learning results of the students from Negeri 20 Public Junior High School City of South Tangerang has been caused by several factors namely: (1) the teachers do not use the tape recorder or the video recorder as the online learning media; (2) the teachers have never used any kind of online learning media, especially the PowerPoint Slide (PPT) during the online learning process; (3) the teachers do not use the pictorial learning materials that can be shared pertaining to the Biology subject; (4) the teachers do not use nor present the learning materials by means of fresh learning media such as plants during the online learning process; (5) the teachers do not assign the plant observation assignment as homework; (6) the teachers do not frequently use the video as the online learning media; and (7) the teachers do not use computer or laptop as the online learning media in Biology. All of these factors have resulted in the decreasing learning enthusiasm among the students and this situation in turn results in the students' hatred against Biology.

If the students attain good or very good learning results without any high rate on learning media use (positive), then this finding should be investigated especially around the Covid-19 conditions that have made using the online learning process. It is very likely that the students who have attained good learning results without any practical sessions in the laboratory have benefitted from certain learning approaches. On the contrary, it is also very likely that the students who have low learning results but high learning motivation are not assessed appropriately by the teachers based on the scoring criteria that have been agreed. In line with the statement, the empirical facts found in the current study have been in accordance with the theory proposed by Nuryani Rustaman, which states that online learning media can improve the learning results in scientific subjects since the learning process of both the students and the university students is heavily influenced by the learning results. The

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students who have been motivated will seriously study the given subjects. In other words, the easier the students memorize something the better the students will be in their learning process and in attaining the learning results.

Unfortunately, during the Covid-19 pandemic, the learning process that has turned online exposes a number of inhibiting factors since several students do not attain sufficient information due to being too late or too long to access the online learning media used in the school or even due to being too difficult to understand the information delivered by the teachers. Specifically, these difficulties can be caused by either the absence of Internet access or the smartphone. Consequently, the online learning media does not have a significant influence on the learning results of Biology among the students in the Negeri 20 Public Junior High School City of South Tangerang.

## VI. CONCLUSIONS

Based on the results of the study that has involved 90 students from Negeri 20 Public Junior High School City of South Tangerang, several conclusions can be drawn. First, the results of descriptive statistical analysis on the learning media use by the teachers of Biology show that the mean score of the learning media use is 83.375 and the mean score falls into the "Moderate" category with an interval 75-85. Then, the percentage of the students in the "Moderate" category is 29% with a total number of students 29 people. Then, the percentage of the students in the "Low" category (below the interval) pertaining to the use of learning media is 0.26 or 26% with a total number of students 26 people while the percentage of the students in the "High" category pertaining to the use of learning media (above the interval) is 0.45 or 45% with the total number of students 45 people.

Second, the results of the descriptive statistical analysis on the learning results of Biology show that the mean score of the learning results is 82.820 and the mean score falls into the "Moderate" category with the interval 80-83 with the total number of students 21 people. The percentage of the learning results in this interval is 21%. Then, the percentage of the learning results from the students who belong to the "Low" category is 0.33 or 33% with a total number of students 33 people while the percentage of the learning results from the students who belong to the "High" category is 0.46 or 46% with a total number of students 46 people. Based on the documents of the learning results in Biology from the students of Negeri 20 Public Junior High School City of South Tangerang in, three learning categories have been found namely "Moderate." "High," and "Very High."

Third, the results of inferential statistical analysis have resulted in the following equation: $\hat{Y} = 79.79 + 0.037X$. Consequently, the hypothesis of the study is accepted. Thus, it can be concluded that the learning media use does not effectively influence the learning results of the students in Biology. Therefore, if variable X improves then variable Y will also improve. Using the significance formula that has been previously mentioned, the t-count value that has been earned is 1.454. Afterward, the t-value should be compared to the t-table value namely 3.089. Since the t-count value is lower than the t-table value (t-count < t-table), it can be safely stated that the online learning media use by the teachers of Biology does not effectively influence the learning results of the students in the subject.

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