International Journal of Progressive Sciences and Technologies (IJPSAT)
ISSN: 2509-0119.

http://ijpsat.ijsht-journals.org
Vol. 22 No. 2 September 2020, pp. 227-231

Analysis of Problems and Needs of Interactive Multimedia on Natural Science Learning Based on Scientific Approach at SMPN 1 Kecamatan Mungka

Syukraini[1] and Linda Advinda[2]

[1]Students of the Master of Educational Sciences, University of Padang
[2]Lecturer in the Graduate Department of Biology, University of Padang

Abstract – The rapid development of information and communication technology has made interactive multimedia as a learning medium that can help students in the learning process based on information technology. Low student learning outcomes require optimal use of school facilities such as computers, internet networks and gadgets through the preparation and use of an interactive media. The purpose of this study was to describe the need for interactive multimedia in natural science learning. This research uses a qualitative descriptive analysis method which includes data collection, data analysis, data presentation and conclusions. Based on the results of data analysis, it can be stated that: 1) The results of the interview with the teaching teacher are not yet available interactive multimedia made by the teacher and according to the needs. 2) The school provides computers/laptops that students can use. 3) Parents allow students to use cellphones that have Android programs. From this study, it was obtained a description of the characteristics of interactive multimedia needed by teachers and students.

Keywords – Interactive Multimedia, Science Learning.

I. INTRODUCTION

The rapid development of information and communication technology increase the need for teaching and learning concepts and mechanisms based on information communication technology and it is become inevitable. The influence of the development of information and communication technology on the world of education is shown by the numbers of school that use various kinds of technology to support the learning process. Technologies commonly used include computers and *cellphones/ gadgets*, so that the concept of learning has shifted to a more modern concept (Novianto et al, 2018). In learning process, it must enable the students to practice the skills needed in 21st century education.

The environment involved in learning is not only interpreted as a place where learning activities take place, but also as a method, media and equipment needed to convey information (Suprehiningrum, 2013). As a conveyor of information, the media contains various components that act as a learning resource or a physical vehicle containing instructional material in the environment of students (Arsyad, 2006), so that a process occurs that can stimulate the thoughts, attention, feelings and interests of students in learning (Sadiman et al., 2009).

Interactive multimedia is one of the learning media that can help students in the learning process based on information technology. The use of interactive multimedia in the learning process has an advantage because it can involve several organs at once, such as ears (*audio*), eyes (*visual*), and hands (*kinetic*) (Arsyad, 2006).

Interactive multimedia is multimedia that can be operated by the user and the user can choose what features are needed

Corresponding Author: Syukraini

for the next process, because it is equipped with a controller (Daryanto, 2010). Interactive multi-media as an individual learning medium has the advantage because it is designed to be used in the independent learning process of students and students are given the flexibility to operate their learning media tools (Novianto et al, 2018). The practicality and ease of using this multimedia can help students to learn according to their learning objectives and can change students' learning situations from learning with effort to learning with fun (Niken and Haryanto, 2010).

Preliminary research that has been carried out shows that there are two main problems, such as learning outcomes of students which are still low and the inadequate use of computer facilities, internet networks and *gadgets* for students to support usage of learning media. The results of interviews with science teachers in 10 junior high schools (SMP) in Limapuluh Kota District showed that all respondents stated there were no computer-based learning media that they could use, while they desperately needed learning media in the learning process at school.

The purpose of this study was to describe the need for interactive multimedia in science learning. This is done as a basis for others being able to obtain concrete data to develop interactive multimedia science learning in accordance with the needs of students in order to achieve learning objectives.

II. Research Method

This study uses a qualitative descriptive analysis method which includes data collection, data analysis, data presentation and conclusion. This research was conducted at SMPN 1 Kec. Mungka. The research subjects were science teachers and 52 grade VIII students. Data collection used a list of questions for interviews and questionnaires to the teacher, as well as a closed questionnaire to find out the problems and needs of students. The questionnaire was analyzed by (1) looking for the percentage of answers to questions with yes or no alternatives, (2) looking for the Total Respondents' Outcome (TCR) for each statement with a Likert scale of 1-5. Value categorization (TCR) uses the following classification:

Table 1: Value categorization classification (TCR)

90% - 100% = Very good
80% - 89.99% = Good
65% - 79.99% = Fairly good
55% - 64, 99% = Not good
0% - 54.99% = Not good
(Sudjana, 2005)

III. Results And Discussion

A. RESULTS

Based on the results of observations to science teacher, Mrs. Indra Asnita, S, Pd as a science teacher at SMPN 1 Mungka District on October 4th, 2019 is:

1. The media that are often used in the learning process are charta, power point, and direct objects.
2. The school have internet network facilities, LCD projectors and computers that can be used by students.
3. The learning outcomes of students' cognitive domains are still under the School Minimum Completeness Criteria.
4. There is no interactive multimedia made by the teacher and according to the needs of the school.

Based on the results of a problem analysis questionnaire distributed to 52 class VIII students of SMPN 1 Mungka District, it is known that the tendency of students' answers to the use of technology and learning media is grouped into three, such as: (a) ownership of cell phones/laptops/ computers, (b) trends in use HP/Laptop/ Computer and (c) the need for learning media.

1. Ownership of HP/Laptop/ Computer by students

The tendency for the highest answer to the aspect of ownership of cell phones/laptops/computers by students is 5th indicator, namely the school provides computers/laptops that can be used by students (90%). The lowest percentage is found in the indicator of parents owning a computer/laptop (4%). It can be seen in Figure 1.

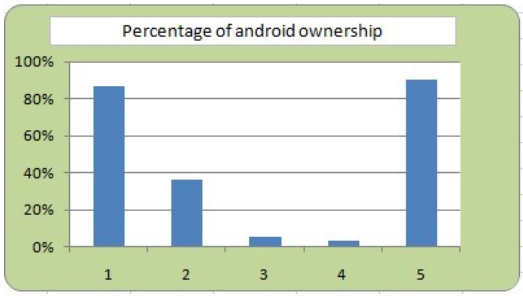

Figure 1. Graph of cellphone/laptop/ computer ownership by students

Description:

Indicator 1. Has a cellphone that has an android program

Indicator 2. Parents have a cellphone that has an Android program.

Indicator 3. Has a computer/laptop.

Indicator 4. Parents have a computer/laptop.

Indicator 5. School provides computers/laptops that can be used by students**.**

2. Using tendency of HP/Laptop/ Computer learners

User tendency HP/Laptop/ Computer (using scores TCR) is the first indicator**,** ie parents allowing students to use HP with an Android program (76.00%), The lowest is at 4th indicator 4, namely students use cellphones during school hours (20.00%). This tendency are fully describe in figure 2.

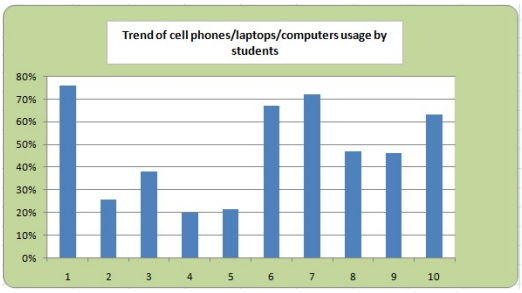

Figure 2.Graph of the trend of cell phones/laptops/computers usage by students

Description:

Indicator 1 Parents allow students to use cell phones that have Android programs

Indicator 2 Parents allow students to bring cellphones/laptops who have an Android program to school.

Indicator 3 Parents allow students to use a computer/laptop.

Indicator 4 Students use cell phones during school hours.

Indicator 5 Students use cell phones for other purposes during school hours.

Indicator 6 Students use cell phones/ computers/laptops to study at home

Indicator 7 Parents admonish students if they see them learning while playing cell phones/laptops/computers

Indicator 8 The teacher admonishes students for using cellphones/laptops while studying.

Indicator 9 Students are diligent in learning after they use cell phones/laptops/computers in learning

Indicator 10 Students understand better the material after they use cell phones/laptops/computers in learning

3. Description of learning media needs for students

The tendency for the highest answers is about the description of learning media needs for participants students (using the TCR score) is on 9th indicator, such as the use of instructional media by the teacher can increase students' attention in learning (85.00%), and 13th indicator i wich the students become more curious if the teacher uses media in learning (85%), while the lowest TCR is on 5th indicator, such as the teacher uses interactive multimedia (which can be held/moved by students) in learning process (43%). The results are fully describe in figure 3.

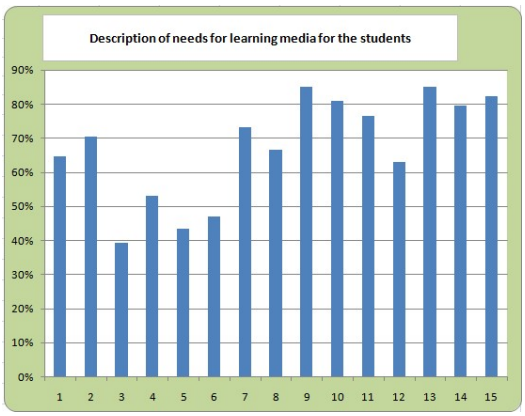

Figure 3. Description of needs for learning media for the students

Description

Indicator 1 The teacher uses print media such as chapters, newspaper clippings or magazines in learning

Indicator 2 The teacher uses transparency media such as Power Point in learning.

Indicator 3 The teacher uses audio media such as radio and tape-recorders in learning.

Indicator 4 The teacher uses video media such as short films and television in learning.

Indicator 5 The teacher uses interactive multimedia (which can be held/moved by students) in learning

Indicator 6 The teacher uses e-learning (internet) in learning

Indicator 7 Learning using learning media is more fun than just the lecture method.

Indicator 8 Students feel bored quickly when following lessons that only take notes and listen without learning media.

Indicator 9 The use of instructional media by teachers can increase the attention of students for learning.

Indicator 10 The use of media as a learning medium makes students more enthusiastic about learning.
Indicator 11 Students are more willing to be involved in learning if the teacher uses learning media
Indicator 12 Students are less able to clearly capture the material presented using only the lecture method without any examples of pictures or videos
Indicator 13 Students want to know more if the teacher using media in learning
Indicator 14 The use of instructional media makes students learn independently.
Indicator 15 The use of instructional media helps students in solving problems that arise in learning.

4. The needs of students for interactive multimedia in science learning

Through a questionnaire aim to describe the needs of students for interactive multimedia show that 94.23% of students agree if there is interactive multimedia learning in school and interactive multimedia consists of material, images, videos, sounds and interactive questions.

Another questionnaire distributed to 52 students showed that the interactive multimedia characteristics favored by students were displaying soft blue as the cover, dominant black on the content, using Comic Sans NS typeface on the cover and content section (Table 2)

Table 2. The characteristic of interactive multimedia needs

No	Features	Dominant results	%
1	Cover color	BlueLight	69
		yellow	44
2	Content color	Black	48
		Blue	44
3	Cover type of writing	Comic Sans MS	40
		Tempus Sans ITC	21
3	Content type of writing	Comic Sans MS	35
		Lucida Callygraphy	35

B. DISCUSSION

This research is a qualitative descriptive study which consist of several process namely data collection, data analysis, data presentation and conclusion drawing. Data collection was carried out through interviews and questionnaires to teachers and distributing questionnaires to students. Interviews with teachers aim to get the background to find research problems.

The results of interviews and questionnaires showed that interactive multimedia had not been used yet by teachers in all of learning process. The media commonly used are charta, power point and direct objects. Meanwhile, school has computers that can be used as learning media in sufficient quantities to be used by students in learning. The learning media that teachers usually use are unable to visualize science material to students properly, as evidenced by the results of student problem questionnaires and student learning outcomes that are still under the KKM (Minimum Completeness Criteria) that have been set by the school.

The low learning outcomes of these students is a big responsibility for educators. Where educators must be able to innovate and be creative in developing learning media to support the learning process to be better and be able to visualize science material, especially for materials that are difficult to provide direct objects. In accordance with the opinion of Novianto, et al. (2018) stated that learning media is used to facilitate the delivery of material to students, especially for material that is abstract. Rahim et al (2019) state that teachers must be able to develop learning media so that they can demonstrate and provide a more detailed description and explanation of learning material, so that students can receive learning material with logic.

From Figure 1 it can be seen that 87% of students have cellphones that have an Android program. According to Muhson (2010) HP can be used as a tool for information technology-based learning. This is in line with the opinion of Anggi P. et al. (2017) which states that Android-based cell phones can be used to run interactive multimedia, so that students can run multimedia to learn whenever and wherever it is sustainable with the 21st century education concept, namely flexibility and adaptability.

From Figure 2 it can be seen that 72% of parents reprimand students if they see them learning while playing their cellphone/laptop/computer. The results of interviews conducted with how many students were known to be using their cellphones more to play online games and social media. This causes parents to think that learning will be disturbed because they are playing with HP. In line with the opinion of Setiawan and Razak (2020) that students use their cellphones more for chatting, *browsing,* and playing games.

This data shows that the use of learning media is very possible because students prefer learning that is done using learning media and students feel bored quickly following lessons that only take notes and listen to the teacher without any learning media. In addition, students are less able to

clearly capture the material presented only by using the lecture method without any examples of pictures or videos. According to Novianto et al., (2018) interactive multimedia containing text, images, sound and animation can make learning more effective. In line with the opinion of Madinah et al. (2015) which states that interactive multimedia is feasible and effective to be used as a learning resource.

Based on the tendency of students 'answers to the use of technology and learning media as described previously, one alternative that needs to be done to increase students' interest in learning is to use interactive multimedia in science learning.

This is in line with the opinion of Saputra and Razak (2020), which states that the display of images and videos can make it easier for students to understand learning. From the data above, it can be seen that students prefer multimedia with a dominant blue color and typeface *comic sans MS*.

IV. CONCLUSION

The importance of the role of the media in science learning is felt by teachers and students. But in fact, the use of media, especially interactive multimedia, is still relatively low. Meanwhile, their access to hardware such as cellphones and computers is quite extensive, both those they own and those available at school.

Therefore, in this study, an analysis of the needs of students for science learning media which is interactive multimedia was carried out. The characteristic of interactive multimedia display that is preferred by students is the dominant blue color with MS comic sans as type of writing.

REFERENCES

[1] Anggi P., M., Wiyono, K., & Sudirman. (2017). Pengembangan Multimedia Interaktif Berbasis Android pada Mata Pelajaran Fisika Pokok Bahasan Suhu, Kalor, dan Perpindahan Kalor untuk SMA Kelas XI. *Prosiding Seminar Nasional Pendidikan IPA 2017 STEM untuk Pembelajaran SAINS Abad 21*.

[2] Arsyad, A. (2006). *Media Pembelajaran* . Jakarta: PT. RajaGrafindo Persada.

[3] Daryanto. (2010). *Media Pembelajaran.* Yogyakarta: Gava Media.

[4] Madinah, U., Abdurrahman, & Maharta, N. (2015). Pengembangan Multimedia Interaktif Berbasis Pendekatan Saintifik pada Materi Cahaya. *Jurnal Pembelajaran Fisika Vol. 3 No. 3*.

[5] Muhson, A. (2010). Pengembangan Media Pembelajaran Berbasis Teknologi Informasi. *Jurnal Pendidikan Akuntansi Indonesia Vol. VIII No. 2*, 1-10.

[6] Niken, A., & Haryanto, D. (2010). *Pembelajaran Multimedia di Sekolah.* Jakarta: Prestasi Pustaka.

[7] Novianto, L. A., Degeng, I. N., & Wedi, A. (2018). Pengembangan Multimedia Interaktif Mata Pelajaran IPA Pokok Bahasan Sistem Peredaran Darah Manusia untuk Kelas VIII SMP Wahid Hasyim Malang. *JKTP Vol. 1 No. 3*, 257-263.

[8] Rahim, F. R., Suherman, D. S., & Murtiani. (2019). Analisis Kompetensi Guru dalam Mempersiapkan Media Pembelajaran Berbasis Teknologi Informasi Era Revolusi Industri 4.0. *Jurnal Eksakta Pendidikan (JEP) Vol. 3 No. 2*, 133-141.

[9] Sadiman, A. S., Rahardjo, R., Haryono, A., & Harjito. (2009). *Media Pendidikan: Pengertian, Pengembangan dan Pemanfaatannya.* Jakarta: PT. Raja Grafindo Persada.

[10] Saputra, R. R., & Razak, A. (2020). Problem Analysis and Requirement of Biology Materials by E-Module Based on Android in SMAN 3 Padang. *International Journal of Progressive Sciences and Technologies (IJPSAT) Vol. 20 No. 1*, 102-108.

[11] Setiawan, D., & Razak, A. (2020). Problem Analysis and Needs E-Book Based on Android of Biology Materials in SMAN 3 Padang. *International Journal of Progressive Sciences and Technologies (IJPSAT) Vol. 20 No. 1*, 60-66.

[12] Suprihatiningrum, J. (2013). *Strategi Pembelajaran Teori & Aplikasi.* Jogjakarta: Ar-Ruzz Media.

[13] Susilana, Rudi & Cepi Riyana. *2007. Media Pembelajaran.Bandung: Wacana Prima.*

[14] Wulandari, T. A., Sibuea, A. M., & Siagian, S. (2018). Pengembangan Media Pembelajaran Berbasis Multimedia Interaktif pada Mata Pelajaran Biologi. *Jurnal TIK dalam Pendidikan Vol. 5 No. 1*, 75-86.