Diah_Analisis Pendahuluan

저자 Deni Ainur Rokhim

제출일: 2022년 10월 23일 오전 12:14 (UTC+0900)
제출 아이디: 1932329559
파일명: artikel_pendahuluan_tadris_kimiya_tanpa_referensi.docx (63.33K)
단어 수: 4252
글자 수: 24295

Profile Of The Need For Interactive Learning Media Based On Digital Literature On Elements Of Chemistry Mater For High School Students

Diah Triwidiastuti[1] , Hayuni Retno Widarti[1*], and Deni Ainur Rokhim[1,2]

[1]Department Of Chemistry Education, Faculty Of Mathematics and Natural Science, State University Of Malang, Jl. Semarang, Malang, 65115, Indoensia
[2]Chemistry, SMAN 3 Sidoarjo, Dr. Wahidin Street, Sidoarjo, East Java

[*]E-mail: hayuni.retno.fmipa@um.ac.id

Received: xxxxxx; Accepted: xxxxxx; Published: xxxxxxx

Abstract

Abstract-It is important to improve the quality of education to prepare human resources for development in Indonesia. The quality of education is highly dependent on the effectiveness of learning and the carrying capacity of the media used. Currently, digital literacy is highly emphasized in creating more informative and accurate learning media. In this case, interactive learning media and integrated with technology are needed to facilitate the explanation of an abstract material, one of which is elemental chemistry. This research uses descriptive qualitative research method. The subjects of this study consisted of 10 chemistry teachers and 250 high school students from 4 sub-districts in Trenggalek Regency. Based on the perspective of teachers and students expressed the need for learning media that can help explain abstract material to be more communicative and interactive to increase learning effectiveness. Furthermore, interactive learning media based on digital literacy have the opportunity to be developed to meet needs with certain criteria.

Keywords: digital literacy, computer, elemental chemisty, interactive, multimedia

DOI: http://dx.doi.org/10.15575/jtk.xxx.xxx

1. Introduction

Improving the quality of education is important in preparing human resources for the development and improvement of the standard of living of the community. One step to develop the quality of education is to improve the effectiveness of the teaching and learning process (Yumini & Rakhmawati, 2015) . In addition, the integration of teaching systems with information technology is also needed to compensate for the dynamics of modernization and the development of the era (Rianto, 2020). In answering evolutionary and implementative learning challenges, a computer -based interactive multimedia utilization step is needed. Interactive multimedia is the combination of two or more media in one program and has the ability to respond or feedback (reciprocity) to its users in order to carry out learning activities (Rafmana et al., 2018). The existence of an interactive learning atmosphere has the opportunity to increase students' understanding of the material being taught.

Chemistry is one branch of Natural Sciences (IPA) which is a compulsory subject for secondary education. The purpose of learning chemistry is to provide understanding of students the ability to think logically, systematically, critically, logically and creatively towards the theory and practice of chemical material (Nuraini, Fitriani, 2019). By paying attention to this, chemistry subjects should be mastered by students. However, in reality there are some material that is often considered difficult to understand so that it affects student learning achievements (Supardi, 2017). For some students chemistry subjects are boring lessons because they study material that is considered abstract, namely atoms (small particles) that cannot be seen in plain view and reactions that can only be seen from the symptoms so that students are not interested in learning chemistry Furthermore (Sunyono, 2017). In addition, some of the materials are needed specifically delivery methods to increase students' understanding, including the chemical material elements.

The average element chemical material is obtained by students in class XII odd semester. In general, this material consists of two important sub materials, namely the main group and chemical elements of the transition. This material has abstract concepts by learning related to the properties of elements in the periodic system of elements, both from the physical and chemical properties that exist in each element including the intracification, electronegativity, mass number, atomic number, the tendency of the atomic radius and so on. In this case class XII students need a good understanding in studying the chemical material for the smooth understanding of the next material(Salsabila & Nurjayadi, 2019). According to (Wahyuni & Yerimadesi, 2021) the average school still teaches the chemical material for elements using only printed book material in the school in the form of an assignment of reading and work on exercise questions without other supporting references. The printed book or package book certainly has shortcomings including the absence of content that contains video aids, animations, and supporting audio so that it is less interactive and still uses a memorization system. In fact,

studying the chemical material of elements not only by memorizing related to the understanding of a concept but also in the law of analysis and the process of thinking in understanding it (Arham & Dwiningsih, 2016). So to increase students' understanding requires tools in the form of learning media.

Criteria good learning media is to be able to improve the learning process of students and student learning outcomes, facilitate educators in conveying information (messages and content) more interesting, and increasing students' understanding of data interpretation, compaction of information and data presentation (Ahyanuardi et al., 2018). These criteria will be more easily achieved when the learning media used can cause action reactions with students so as to create an interaction (Kirschner, A., Karpinski, 2010). These needs are in accordance with the principles of interactive learning media integrated computers and the internet. The types of interactive learning media utilize interactions between media and students to help explain learning materials that are abstract (concrete) (Yanto, 2019). According to (Istiqlal, 2017) computer -based learning media for teaching is better than using films, tutors, videos and other traditional methods. The latest computer -based learning media utilizes multimedia including graphics, video and audio that are packaged interactively in computers (Khuzaini & Santosa, 2016). The learning system uses this interactive multimedia in accordance with one of the 21st century competency values, namely using a variety of media and technology, and assessing its impact.

The Merdeka Learning Curriculum that applies currently provides autonomy for educational institutions, teachers and students to innovate, be creative and independent in learning as needed. This is an opportunity as well as a challenge in developing good interactive learning media and in accordance with learning needs and improving learning performance (Sherly et al., 2020). In its application interactive learning must also be able to increase student literacy, especially in terms of digital literacy. Digital literacy is an effort to know, to search, to understand, to analyze, and to use digital technology. So that in principle digital literacy includes the competencies in interactive learning. In addition, digital literacy also plays a role in streamlining interaction and communication during the learning process. For example, the ability to use the camera and microphone features on the device to be able to be present and connected virtually. Furthermore, the ability to use software to present text and supporting images (graphics, illustrations, etc.) play a role to optimize collaboration and communication. With the creation in making learning media, it is expected to increase students' understanding of the material provided. Research conducted aims to determine the application of interactive learning media based on digital literacy in chemical material elements, as well as obtaining information about things that need to be used as a reference in developing interactive learning media based on digital literacy to increase effectiveness, usefulness and success of delivering learning materials.

2. Method

This study uses a qualitative descriptive research method by analyzing teachers and students. The subjects in this study consisted of 10 chemical teachers and 80 high school students from 4 sub - districts in Trenggalek Regency. The way to select the subject uses the simple random sampling method where each element is chosen free from other elements (Arieska & Herdiani, 2018). The research procedure was carried out by searching for data information through a questionnaire link shared by students and teachers using the Google Form platform. The types of questionnaires used are open questionnaires and closed questionnaires. This questionnaire has three indicators as outlined in 10 items for students and 12 items for teachers. The instruments used have two types of questions, namely multiple choice questions beskala guttman and questions with answers to descriptions/explanations. Data obtained from the results of the teacher and student questionnaires were analyzed descriptively statistically to be used in describing the needs of interactive learning media based on digital literacy. Exposure to the results of the analysis through frequency distribution with a percentage and qualitative explanation. The data is interpreted with the conversion of the achievement level with a scale of 5 contained in Table 1.

Table 1. Conversion of achievement levels with a scale of 5

No.	Percentage	category
1.	81 - 100	Very good
2.	61 - 80	Good
3.	41 - 60	Pretty good
4.	21 - 40	Not good
5.	< 20	Very not good

3. Result and Discussion

The purpose of developing interactive learning media based on digital literacy in chemical material element is to facilitate the delivery of material, especially the chemistry of elements more interactively through the use of multimedia so as to create outputs that are in accordance with learning targets. The test analysis test is a preliminary step in developing interactive learning media based on digital literacy. This is supported by research (Damopolii et al., 2020).

Based on questions from the questionnaire by the teacher and students, data obtained from answers regarding the needs of developing interactive learning media based on digital literacy using three indicators of achievement as follows.

3.1 Implementation of Learning Chemical Materials Elements with Interactive Learning Media Based on Digital Literacy

Information about the implementation of learning chemical learning material with interactive learning media based on digital literacy obtained from three closed questionnaire questions and one open questionnaire question with the results displayed in Table 2 and Table 3

Table 2. Closed questionnaire results indicators of learning implementation in chemical materials using interactive media based on digital literacy

No	Questions	Average results

		Teacher	Student
1.	The level of implementation of the learning of elemental chemistry using multimedia-based learning media	62%	58%
2.	The level of implementation of the application of interactive learning media based on digital literacy on chemical elements	39%	37%
3.	The level of implementation of the teacher in suggesting to students to use digital literacy-based learning references	72%	52%

Table 3. Results of the Open Questionnaire Indicators of Learning Implementation on Elemental Chemistry Using Interactive Media Based on Digital Literacy

Questions	Average results	
	Teacher	Student
What kind of interactive learning on elemental chemistry has been applied?	3 out of 10 teachers have made interactive learning media on elemental chemistry by incorporating interactive multimedia components into teaching materials such as animations, graphics, illustrations, videos, and audio that can be accessed by students	The majority of students answered that the teacher provided material and assignments for students to do. Students also answered that some teachers already use the internet in teaching, but most teachers still use printed books/print modules

From question 1 in table 2, information about the level of implementation of elemental chemistry learning using multimedia from the teacher's perspective is 65% and the student's perspective is 62% the results are included in the good category. Furthermore, in question 2 in table 2, information is obtained that the application of interactive learning media based on digital literacy from the teacher's perspective is 39% and from the perspective of students by 37%, this percentage shows that the use of digital literacy-based learning media is still very lacking. This is in line with (Kaniawati, 2017), which states that the use of learning media is currently still less varied, in one semester the average teacher only uses teaching aids for learning media only two to three times. In addition, in (Puspitasari, 2019), the learning media that is widely used among students is the print module which tends to have simple pictures, informative literature, and contains only practice questions, so for some students who have not been able to study independently, it will be difficult to learn. In addition, in the research of (Salsabila & Nurjayadi, 2019), more than 70% of students considered the chemical printed books used to be difficult to understand and less interesting. In fact, according to the more interesting the learning media used by the teacher, the higher the

learning motivation of students, this is due to the varied forms of media that can prevent students' boredom in the learning process (Sri et al., 2021). In addition, the application of interactive learning media in schools is also still lacking, this is evidenced by (Agustini et al., 2016), which states that the average teacher in schools has not utilized technology as an interactive learning medium properly, many teachers still use conventional methods in conveying Theory. However, the teacher once advised students to learn to use digital literacy. This can be seen from the results of the questionnaire in question 3 table 2, where the results of the survey on the level of implementation based on the perspective of students are 52% (enough category) and teachers are 72% (good category).

Based on the questions in table 3, information obtained from 3 out of 10 teacher respondents stated that the application of making interactive learning media on elemental chemistry was done by incorporating the type of inserting interactive multimedia components into teaching materials such as animation, video, and audio that could be accessed by students. This is very appropriate to be done by teachers to increase the enthusiasm of students in terms of learning, in addition to the addition of audio and visual media to learning can increase students' understanding of the material being taught and facilitate the transfer of knowledge between teachers and students in a more communicative manner (Manurung, 2021). In addition, based on the questions in table 3 regarding interactive learning on elemental chemistry from the student's perspective, information is obtained that learning chemistry on elemental material has so far been less effective because on average it is only glued to printed books/print modules. Students stated that the teacher only gave material with the lecture method and then gave assignments related to the material that had been delivered, so that students had a tendency to be passive in learning. However, some of the respondent students also stated that there were teachers who had started using the internet literature integrated learning media. The difference in the application of learning media is possible due to IT capabilities and school facilities, so that some teachers have not been able to apply interactive multimedia-based learning media based on digital literacy on elemental chemistry. The results of research by (Arham & Dwiningsih, 2016), interactive multimedia was declared feasible as a learning medium on elemental chemistry in terms of instructional quality, this quality and purpose, and technical quality. That way interactive multimedia is able to help explain abstract elemental chemistry.

3.2 Implementation of Interactive Learning Media for Elemental Chemistry Using Electronic and Computer Media

Information related to the implementation of interactive learning of elemental chemistry using electronic media was obtained from 2 closed questionnaire questions and 1 open questionnaire, each of which results are shown in table 4 and table 5

Table 4. Results of Closed Questionnaire Indicators of Implementation of Interactive Learning Media for Elemental Chemistry Using Electronic Media

No	Questions	Average results	
		Teacher	Student
1.	The level of use of electronic-based media in the learning process	91%	72,5%
2.	The level of use of computer-based media in the learning process	75,5%	82,6%

Table 5. Results of the Open Questionnaire Indicators of the Implementation of Interactive Learning Media for Elemental Chemistry Using Electronic Media

Questions	Average results	
	Teacher	Student
What media are commonly used in the learning process of elemental chemistry?	powerpoint, Charta, printed book, video, smartboard, teams office 365, google form, dan google meet	Modules, worksheets, youtube videos, telegram, whatsapp, google classroom, social media

Based on question 1 in table 4 regarding the level of use of electronic-based media in the learning process, the survey results from the teacher's perspective were 91% (very good) and the student perspective was 72.5% (good). In addition, based on the open questionnaire questions in table 5, information is obtained that the learning media commonly used in the learning process for elemental chemistry include powerpoint, chart, printed books, videos, smartboards, teams office 365, google form, and google meet. This shows that electronic media have been widely used by teachers in helping deliver material in class. According to the research of (Daud et al., 2019) it is important for teachers to master certain digital media so that teachers can maintain students' interest in learning through internet media. Teachers are also highly recommended to master the method or method for creating interesting content, able to convey information either pictures, verbally, or using audio that has been developed as teaching material. Effective learning is when the teacher is able to convey a material /message /information accurately, precisely, and easily understood by students. As an integral part of the inclusion of technology components, it can affect other components including changes in the role of teachers in school education units. In this case the teacher is no longer the center, or the only source of learning, but has the main role as a facilitator, designer of the learning process and motivator for students in the learning process. The use of technology can also support the concretization of abstract concepts in learning and allow students to interact with the environment outside the classroom without mobilization (Nurvitasari, 2018). In question 2 table 4 regarding the level of computer-based media use, the survey results from the teacher's perspective are 75.5% (good) and the student's perspective is 82.6% (very good). So it can be said that many students have used computers in the preparation and delivery of the material. In (Priyanto, 2019), computer multimedia makes learning more interactive, effective, efficient, and interesting. This is also supported by

research by (Suryadi, 2019) which states that the use of technology is proven to improve the quality of affective learning.

3.3 The Need for Development of Digital Literacy-Based Interactive Learning Media on Elemental Chemistry

Information about the need for developing interactive learning media based on digital literacy on elemental chemistry was obtained from 1 open questionnaire and 5 closed questionnaire questions, the results of which are shown in Table 6 and Table 7, respectively.

Table 6. Results of Closed Questionnaire Needs Development of Interactive Learning Media based on Digital Literacy on Elemental Chemistry

No	Questions	Average Results	
		Teacher	Student
1.	Level of need for the use of electronic-based media in the learning process	98%	92,5%
2.	The level of need for the use of computer-based learning media in the elemental chemistry learning process	100%	92,6%
3	The level of attractiveness of digital literacy-based interactive learning media on elemental chemistry	100%	98%
4	The level of confidence in the use of electronic-based learning media (such as computers) in explaining the subject matter	100%	97%
5	The level of confidence in the use of interactive multimedia in making digital literacy-based learning media that contains chemical elements	100%	96,5%

Table 7. Results of the Open Questionnaire on the Need for Development of Interactive Learning Media based on Digital Literacy on Elemental Chemistry

Question	Average Results
	Teacher
How are digital literacy-based learning media needed to support the learning process for elemental chemistry?	interactive media that has expertise in making explanations related to material in a logical and accurate manner with technical abilities, information management and artistic abilities, making these abilities collaborative that attracts students' learning interest

Based on question 1 in table 6 regarding the level of need for electronic-based media in the learning process, the survey results obtained from the teacher's perspective of 98% and from the student's perspective of 92.5%. This result is included in the very good category. That is, electronic-based media is needed to support the implementation of learning. In question 2 in table 6 regarding the level of need for the use of computer-based learning media in the learning process of elemental chemistry, the survey results obtained are almost the same as question 6 and are included in the very good category, where from the teacher's perspective it is 100% and students are 92.6%. That is, computer-based media is indispensable in supporting learning on elemental chemistry. This is in line with (Cahdriyana & Richardo, 2016) which states that one of the environmental changes that greatly affects the world of education is the presence of information technology (IT). Technology serves as a material and a tool for learning. In this case, technology is interpreted as a learning material as well as a tool to master a computer-assisted competency. In this case the computer has been programmed in such a way that students are guided in stages by using the principles of complete learning to master the competencies. In this case, the position of technology is like a teacher who functions as: facilitator, motivator, transmitter, and evaluator.

Based on question 3 in table 6 regarding the level of attractiveness of interactive learning media based on digital literacy 3 on the elemental chemistry material to be developed, survey results were obtained, 100% from the teacher's perspective and 98% from the student's perspective. In addition, questions 4 and 5 of table 6 regarding the level of trust in the use of electronic-based learning media (such as computers) in explaining the subject matter also received a very good category. With the integrated learning of electronic media, abstract material will be more easily conveyed with multimedia visualization. So that learning will be more interactive and effective, and memorable for students. The use of electronic media in addition to saving words and time, explanations will also be more easily understood by students, interesting, arouse interest in learning, eliminate misunderstandings, and the information conveyed is more consistent.

Based on the questions in table 7, information is obtained from the teacher's perspective regarding the characteristics of interactive multimedia-based learning media needed to support the learning process for elemental chemistry. These are interactive media that have expertise in making explanations related to material in a logical and accurate manner with technical skills, information management and artistic skills. make this ability a collaboration that attracts student learning interest. The survey results are in accordance with the character of digital literacy-based learning media, where according to (Kaniawati, 2017), digital literacy is the ability to understand and use information in various formats (text, images, audio, video, and animation) and from various sources presented through devices. electronics to be more accurate. Digital literacy can help explain information with a specific purpose (according to the user's goals). Digital literacy can be combined with audio and visual arts that can attract students to understand a concept that previously seemed boring, abstract and difficult to understand. The explanation can also be made historically or have a plot so that students better understand the process presented in the material. There are several advantages of using computers in digital literacy as an interactive learning medium for elemental chemistry material related to student learning abilities, including computers can create an effective learning climate for slow learners, but can also spur learning effectiveness for faster students. learner. There are 12 pillars of characteristics of computer-based interactive learning media, namely (1) based on instructional objectives, (2) according to student characteristics, (3) maximizing interaction, (4) individualization, (5) maintaining student interest, (6) approaching students individually. positive, (7) provides a variety of feedback, (8) appropriate to the instructional environment, (9) can

evaluate performance properly, (10) uses computer resources sparingly, (11) is based on instructional principles, and (12) has been thoroughly evaluated. There are two important competencies that support the implementation of interactive learning, namely Communication and collaboration which is the main element of digital literacy. Communication and collaboration has an individual competence component consisting of use skills which are the ability to access and operate media, critical understanding in the form of the ability to analyze and evaluate media content comprehensively and communicative abilities, namely the ability to communicate and participate through media.

Therefore, the development of interactive learning media based on digital literacy is expected to become an evolutionary learning strategy and increase the learning power of students and increase the efficiency of learning in the classroom. Technology plays an important role both learned and implemented properly to help make learning more lively and there are meaningful interactions. The results of this study are in the form of information about the perspectives of teachers and students regarding the analysis of needs related to interactive learning media based on digital literacy that will be developed, which will later be used as a reference in developing learning media that are in accordance with needs and are effective in improving the quality of learning.

4. Conclusion

The development of interactive learning media based on digital literacy on elemental chemistry is determined through the results of closed and open questionnaire analysis. This analysis includes the needs of teachers and students. Information was obtained that teachers and students at several schools in Trenggalek strongly agree with the development of interactive learning media based on digital literacy on elemental chemistry. The results of the study stated that teachers need learning media that can help explain abstract material to be more communicative and interactive so that it is expected to increase students' understanding and interest in the material presented. In addition, learning media is also integrated with computers as interactive multimedia that can combine technical and art in a harmonious way to be used in developing more memorable learning for students. This research is the initial research of the research section on the development of interactive learning media based on digital literacy on elemental chemistry, so further research is still needed to develop this learning media.

References

Diah_Analisis Pendahuluan

독창성 보고서

17%	13%	11%	8%
유사성 지표	인터넷 출처	출판물	학생 보고서

일차 출처

1	Submitted to Syiah Kuala University 학생 보고서	4%
2	www.scilit.net 인터넷 출처	2%
3	Submitted to Universitas Riau 학생 보고서	1%
4	M L R Jannah, F S Irwansyah, N Widayani. "Making Interactive Learning Media Based on Augmented Reality on the Concept of Molecular Chirality", Journal of Physics: Conference Series, 2019 출판물	1%
5	M Ulfa, Yerizon, I M Arnawa. "The Influence of Using Computers in Mathematics Learning to Students Mathematical Ability", Journal of Physics: Conference Series, 2021 출판물	1%
6	Submitted to UIN Sunan Ampel Surabaya 학생 보고서	1%
7	e-journal.unipma.ac.id	

	인터넷 출처	1 %
8	staff.uny.ac.id 인터넷 출처	1 %
9	ejournal.unib.ac.id 인터넷 출처	<1 %
10	icomse.fmipa.um.ac.id 인터넷 출처	<1 %
11	Hayuni Retno Widarti, Rini Retnosari, Siti Marfu'ah. "Misconception of pre-service chemistry teachers about the concept of resonances in organic chemistry course", AIP Publishing, 2017 출판물	<1 %
12	Wahyu Pujiyono, Yana Hendriana, Istiqomah Dwi Susanti. "Interactive learning media based on RPP ICT", 2016 International Conference on Information Technology Systems and Innovation (ICITSI), 2016 출판물	<1 %
13	www.sersc.org 인터넷 출처	<1 %
14	media.neliti.com 인터넷 출처	<1 %
15	garuda.ristekbrin.go.id 인터넷 출처	<1 %

16	Rika Arliza, Ahmad Yani, Iwan Setiawan. "Development of Interactive Learning Media based on Android Education Geography", Journal of Physics: Conference Series, 2019 출판물	<1 %
17	digilib.uinsgd.ac.id 인터넷 출처	<1 %
18	journalofdiversity.com 인터넷 출처	<1 %
19	www.iiste.org 인터넷 출처	<1 %
20	talenta.usu.ac.id 인터넷 출처	<1 %
21	Defliyanto Defliyanto, Tono Sugihartono, Edwin Hariansyah. "Implementation Of PJOK Learning During The Covid-19 Pandemic Between Public Schools And Private Elementary Schools In Rejang Lebong Regency", Kinestetik : Jurnal Ilmiah Pendidikan Jasmani, 2021 출판물	<1 %
22	Mu'jizatin Fadiana, Yulaikah Yulaikah, Diah Kusumawati. "The Development of Semiotic Based Contextual Mathematics Learning Videos to Support Learning from Home", AL-ISHLAH: Jurnal Pendidikan, 2021 출판물	<1 %

23	download.atlantis-press.com 인터넷 출처	<1 %
24	fmipa.um.ac.id 인터넷 출처	<1 %
25	jurnal.ar-raniry.ac.id 인터넷 출처	<1 %

인용문 제외	꺼짐	일치 제외	꺼짐
참고 문헌 제외	꺼짐		