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The Effectiveness of Using Youtube in Basic Chemistry Practicum Courses in Digital-Based Learning to Increase Student Creativity

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ABSTRACT

The study aimed to determine the effectiveness of using Youtube in basic chemistry practicum courses in digital-based learning to increase student creativity. The subjects of this study were students of the chemical education study program, totaling 15 students. Data collection techniques used are tests, observations, and documentation. The data analysis technique was carried out in a quantitative descriptive manner. The research was carried out in two cycles. The results showed that there was an increase in learning outcomes and also student creativity in the use of Youtube in basic chemistry practicum courses. Learning outcomes in the first cycle the average value is 74.73. These results still do not meet the mastery value of the basic chemistry practicum course, which is 75. Then proceed to cycle II which has an average value of 85.53. The results in the second cycle stated that the average value had reached completeness or graduation in the basic chemistry practicum course, which was 85.53. Thus, an increase in the average value from cycle I to cycle II of 14.45% states that the use of youtube in basic chemistry practicum courses in digital-based learning is effective in improving student learning outcomes. Based on observational data, it is stated that the use of YouTube in the Basic Chemistry Practicum in Digital-Based Learning is effective for increasing Creativity.

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1. INTRODUCTION

Learning is a process of a person's mental activity in interacting with his environment to produce positive changes in behavior (behavior) both in terms of knowledge (cognitive), attitude (affective), and psychomotor (psychomotor). We can determine whether someone has learned or not, by comparing the conditions before and after the learning process takes place (Sanjaya, 2010).

The development of information technology is growing rapidly from time to time so that it allows everyone to access all information that is scattered, along with the ease of use of internet facilities which makes social media culture more widespread to all circles, so that

the dissemination of information is not limited. At this time, information technology has reached the field of education, namely with a change in the learning paradigm which was initially only centered on teachers/teachers/lecturers. Now, the paradigm has changed to learner-centered learning for students who use information technology (Rusli et al., 2017).

The rapid development of information and technology cannot be avoided and is an important part of education and learning. Learning is not limited by space and time. Learning can be done anywhere, anytime, and knows no distance. Therefore, digital-based learning is very helpful in today's learning process. Learning innovation 4.0 emphasizes digital learning which must master technology and its application in learning (Joenaidy, 2019).

Digital learning is essentially learning involving innovative digital tools and technology during the teaching and learning process, and is often also referred to as Technology Enhanced Learning (TEL) or e-Learning. Exploring the use of digital technology allows educators to design more engaging learning opportunities in the lessons they teach, where lesson plans can be combined face-to-face or entirely online (Sutrisno Edy, 2011).\

Digital learning is a learning practice that uses technology effectively to strengthen the learner's learning experience emphasizing high-quality instruction and providing access to challenging and engaging content, feedback through formative assessment, and opportunities to learn anytime, and anywhere. Digital learning encompasses many different aspects, tools, and applications to support, and empower educators and learners. In other words, digital learning is an activity or learning activity that uses the role of the internet or digital technology both in terms of preparation, implementation, and learning assessment; carried out by students, teachers, and parents of students (Daryanto & Suryanto, 2022).

Regarding the various uses of Digital Learning, several applications can be integrated and utilized in digital classes, including the use of mobile learning or m-learning, the use of tactical media such as Facebook, Instagram, Youtube, Snapchat, Twitter, Whatsapp, Line, and so on; the use of game-based learning, as well as the use of Cloud Computing (Musiin & Eko Indrajit, 2020).

Normal chemistry practicum activities, especially at the university level, consist of three main stages: pre-practicum, core practicum, and post-practicum. Pre-practicum is a preparatory stage that students do by studying concepts and making work plans. The next stage is the core activities carried out by the agreed objectives and work plans. This activity involves the use of glassware, instruments, and materials with varying levels of safety and risk. The last stage is post practicum to analyze the data analysis of the experimental results to obtain the appropriate conclusions. This series of chemistry practicums is a learning formulation that has been considered effective, because it not only improves students' conceptual and cognitive understanding, but also forms technical skills such as manipulation, observation, data collection, data processing, and analysis, interpretation of observations, problem-solving, work teamwork, and communication skills (Rokhim et al., 2020).

The gap in the implementation of chemistry practicum learning requires an alternative solution that is most likely to be carried out. The alternative appears in the form of using online technology as a learning medium (Setiaji & Dinata, 2020).

It can be seen that youtube used by students is so far effective in terms of usability, accuracy, and scope. Usefulness here is the extent to which the media is useful. Youtube functions as a platform to find information through videos that can be viewed directly(Samosir et al., 2018). YouTube provides a service to upload, download, and share videos. Youtube provides a variety of technical things, such as how to use the application in statistics and various practical ways of doing things that are initially complicated and impractical. If we realize that YouTube has various uses that aim to make it easier for users (Haryati, 2012).

Effectiveness is the extent to which it is used or implemented in everyday life. Studying the use of Youtube can improve students' conceptual understanding and motivation (Iwantara et al., 2014).

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practical ways of doing things that are initially complicated and impractical. If we realize that YouTube has various uses that aim to make it easier for users (Yusri et al., 2018)

The gaps that occur in the practicum can be overcome through YouTube as digital learning which becomes additional information that may not be done alone in the laboratory. Students can access complete practicum videos related to inadequate laboratory facilities. The purpose of this study was of using Youtube in basic chemistry practicum courses in digital-based learning to increase student creativity.

2. METHODOLOGY

This research uses a descriptive qualitative approach. The type of research used is Action Research, which is research conducted by lecturers to solve problems that occur in the classroom/lecture room during the learning process to improve the quality of learning in the classroom. The next step in this research is that the researcher takes action in the first cycle. The subjects in this study were students of the Chemistry Education Department who took part in even semester learning for the 2021/2022 academic year in the basic chemistry practicum course.

Techniques in collecting research data were carried out using observation sheet formats and learning outcomes tests. Observation is used to observe and determine the suitability of actions taken by lecturers with plans that have been prepared and student activities during the learning process and student learning outcomes tests to determine the achievement of passing grades for basic chemistry practicum courses. The learning outcomes test instrument used was 10 description questions which included practical material that was carried out. Researchers analyzed data on student learning outcomes qualitatively and quantitatively. This research was conducted in 2 cycles. Cycle 1 consists of 1 meeting, where each cycle has held an evaluation to determine the level of student ability after the learning process takes place and continues to cycle II to correct deficiencies in cycle I. The steps of data analysis techniques carried out are by collecting students' initial scores before treatment (pre-cycle), the value of cycle I and cycle II, and data analysis of student creativity observations taken during the learning process. Furthermore, conclude conclusions from the data obtained in the form of descriptions and qualitative.

3. RESULT AND DISCUSSION

The percentage of students' completeness has increased by 61.25%. To find out the increase in learning outcomes from cycle I to cycle II, can be seen in Table 1

Table 1. List of Learning Outcomes in Cycle I and Cycle II

		Completeness				percentage			
I	II	Cycle I		Cycle II		Cycle I		Cycle II	
		T	BT	T	BT	T	BT	T	BT
74,73	86,06	6	9	14	1	40 %	60%	92 %	8%

Based on the table above, it can be seen that in the second cycle there was an increase from the first cycle, this can be proven in the class average increased by 15.16% and in the first cycle, the students increased by 6 while in the second cycle there were 14 students.

The results of observations made in cycle II showed that students were more creative, enthusiastic, and serious in participating in learning activities. The implementation of the second cycle looks better than the first cycle, this is proven by the increasing results of the evaluation at the end of the second cycle. The improvement in cycle II in basic chemistry practicum using Youtube turned out to give satisfactory results as planned. To find out more details about improving learning outcomes can be seen in table 2.

Table 2. List of Pre-Cycle Learning Outcomes, Cycle I and Cycle II

		Completeness				Average value		
Pre Cycle		Cycle I		Cycle II		Pre Cycle	Cycle I	Cycle I
T	BT	T	BT	T	BT			
0	15	6	9	14	1	45,73	74,73	85,53

In general, the increase in learning outcomes from cycle I to cycle II can be seen in Figure 1.

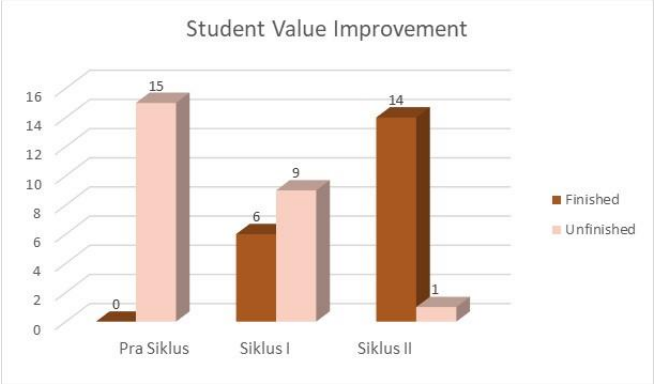

Figure 1. Diagram of Increasing the Number of Students Who Have Achieved Completeness

Based on the data above, it can be seen that there is an increase in learning outcomes. This can be seen in the class average. From pre-cycle I to cycle I, it was 63.4% from 45.73 to 74.73. From cycle I to cycle II there was an increase of 14.45% from 74.73 to 85.5. Based on these data, this research has been achieved due to an increase in student learning outcomes.

The results of observations of student creativity carried out during the learning process from cycle I and cycle II in the use of Youtube in basic chemistry practicum courses can be seen in table 3 and figure 2

Table 3. List of Student Creativity Observation Percentages in Cycle I and Cycle II

Number	Category	Percentage	
		Cycle I	**Cycle II**
1	Very Good	13,33%	40%
2	Good	46,66%	47%
3	Enough	26,66%	13%
4	un enough	13,33%	0 %
5	not good	0%	0%
	Jumlah	**100%**	**100%**

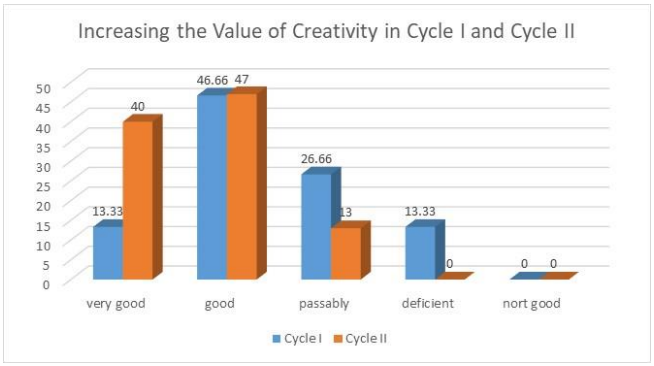

Figure 2. Diagram of Student Creativity Observation Improvement in Cycle I and Cycle II

Based on the data above, it can be seen that there is an increase in student creativity. This can be seen in the percentage of observations based on each assessment indicator. From the first cycle, there were 13.33% of students entered the very good category and in the second cycle, it increased to 40%. Based on these data, this research has been achieved due to an increase in student creativity in basic chemistry practicum using Youtube.

Discussion

In this discussion, the results of research on the use of Youtube in basic chemistry practicum courses are described in increasing student creativity. Based on research, the use of Youtube can improve the learning outcomes of basic chemistry practicum for students in chemistry education study programs. This is because learning to use Youtube in the learning process can attract students' attention so it helps improve students' understanding of the material presented by the lecturer. In using Youtube, lecturers can present complete and clear practicum videos so that the procedures and research results

can be understood by students. Video from Youtube is a complete media including visual, audio, and audiovisual, so that students can understand the lesson well and have the same and correct perspective on an object. In learning, you can see pictures or examples become more real by using multimedia or pictures with beautiful sound effects. So that it can evoke the world of theory with reality.

The selection and use of YouTube as a digital-based learning model that can enrich students' knowledge and experience needs to be considered to achieve effective and efficient learning success. If students need additional information related to the material they are studying, students can view video shows that have been prepared by the lecturer in advance. Students can take other video references that are still related to one material, so that students understand the study of the material. Using videos from Youtube as digital-based learning helps students in their learning process. In other words, it is very helpful for students to get additional information other than books in the library or student handbooks and explanations from the teacher. Availability of up-to-date information about various kinds of scientific and technological developments that occur in various parts of the world. So that the knowledge and insight gained by students will be wider and have exceeded the planned target. And as a comparison of the information presented by the lecturer, enriching knowledge, and looking for something that requires in-depth explanation and understanding.

In connection with the basic chemistry practicum course which should be carried out in the laboratory using real tools and materials, but the tools and materials are incomplete or expensive and it can be said that the tools and materials are inadequate to experiment, the observation solution is carried out using Youtube videos. Digital-based learning that is currently developing makes learning techniques also follow technological developments, because the role of the learner is not a passive object that only receives information from the teacher, but is more active, creative, and participatory in the learning process. Students not only remember facts or retell the information they receive from the teacher, but can produce or find various information or knowledge. Through YouTube, students can see a variety of diverse trials, students can easily replay videos that they feel are not clear and even students can look for other videos as additional information on an experiment, and students can also use Youtube as a means of sharing information that can later be make their experiments and upload them on their respective Youtube channels.

Learning to use videos from Youtube as digital learning has helped make it easier for students to learn and make it easier for lecturers to teach. Students can access practicum videos from anywhere, students can overcome the problem if the tools and materials are not adequate, and they can watch the experiment directly through Youtube videos.

4. CONCLUSION

After the author describes the results of research on the use of Youtube as a digital learning medium for basic chemistry practicum at the Chemistry Education Study Program, University of HKBP Nommensen Pematang Siantar, it can be concluded that the use of Youtube in basic chemistry practicum courses in digital learning to increase student creativity is said to be effective. Here videos from Youtube are used as learning media to find basic chemistry practicum lesson materials. By utilizing the facilities available on campus, students can get up-to-date learning resources. Learning activities carried out by students in the classroom or outside the classroom are adjusted to the practical material. Students can access various experimental videos but with the same practicum title. The creativity of a lecturer in utilizing advances in information and communication technology is very necessary in advancing the world of education

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