

Youtube as an Alternative for Distance Learning (DL) Chemistry: Study of Interests and Motivation

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Abstract

This study aims to determine the interests and motivations of students in learning chemistry by utilizing YouTube as an alternative platform in distance learning. This type of research is descriptive quantitative research. Data were obtained from the survey of interest and motivation questionnaires using google forms taken for five weeks during the learning process. The respondents of this study were 100 students majoring in chemistry who studied organic chemistry using YouTube as a distance learning platform. The results showed that youtube as an alternative platform for distance learning (DL) is considered very good for positively impacting students' interest and motivation in studying chemistry. But in its use, it must be accompanied by applications or other media that can support the learning process, especially on material related to the experiment. In addition, in using YouTube, it is necessary to pay attention to aspects such as sound quality, image quality, size of writing, and clarity of the material so that the material presented is easy to understand, straightforward and exciting.

Keywords: youtube; distance learning; chemistry; interest; motivation

Abstrak

Penelitian ini bertujuan untuk mengetahui minat dan motivasi mahasiswa sebagai peserta didik pada pembelajaran kimia dengan memanfaatkan *youtube* sebagai salah satu platform alternatif dalam pembelajaran jarak jauh. Jenis penelitian ini adalah penelitian kuantitatif deskriptif dan data diperoleh dari hasil survei angket minat dan motivasi menggunakan *google form* yang diambil sebanyak 5 kali pertemuan selama pembelajaran. Responden dari penelitian ini adalah 100 mahasiswa jurusan kimia yang mempelajari kimia organik dengan menggunakan *youtube* sebagai platform pembelajaran jarak jauh. Hasil penelitian menunjukkan bahwa *youtube* sebagai salah satu platform alternatif untuk pembelajaran jarak jauh (PJJ) dinilai sangat baik untuk memberikan dampak positif terhadap minat dan motivasi mahasiswa dalam mempelajari materi kimia. namun dalam penggunaannya harus disertai dengan aplikasi atau media lain yang dapat mendukung proses pembelajaran terutama pada materi yang berhubungan dengan praktikum. Selain itu, dalam penggunaan *youtube* perlu diperhatikan aspek-aspek seperti kualitas suara, kualitas gambar, ukuran tulisan dan kejelasan materi agar materi yang disampaikan mudah dipahami, jelas dan menarik.

Kata kunci: youtube; distance learning; chemistry; interest; motivation

Introduction

The entry of the industrial revolution 4.0 era coincided with the emergence of

problems where the world was facing the Covid-19 pandemic forced learning that was initially carried out face-to-face or blended learning to change to online drastically.

Schools and colleges are temporarily closed indefinitely. This is done to suppress the wider spread of the Covid-19 virus (Surandika, Gunandi, & Jaya, 2020).

By implementing online learning, learning can be done anytime and anywhere, even though the distance between educators and students is far. Distance Learning (PJJ) in Indonesia has existed for a long time, even since the beginning of independence, using educational radio broadcasts (Munir, 2009). The implementation of distance learning in the pandemic era aims to be an alternative so that the teaching and learning process continues to be carried out so that the educational standards regulated in the law are still met (Surandika et al., 2020).

Technology and informatics in the modern era are no longer difficult to find. They are growing very rapidly, so that the delivery of material in distance learning has undergone a metamorphosis. The material is delivered via the internet, such as web-learning, conference applications, etc. Learning video media which is then shared through online learning platforms, is one of the ways that can be used in distance learning today (Fuady, 2016). One of the social media platforms where online videos are uploaded and widely used to learn besides zoom, google meet, or Webex is Youtube. Videos uploaded to YouTube can be accessed by anyone and anytime as long as there is internet access. Videos are uploaded for free, provided the user already has an account on YouTube (Ririn Puspita, Niko Kurniawan, & Karim, 2020).

According to Lestari (2013), YouTube as a medium has tremendous potential to significantly improve the quality of distance learning. Youtube video media is also suitable if used in explaining material related to science that requires practice in learning to increase understanding of concepts and the motivation of students (Wantara, Sadia, & Suma, 2014). Youtube can give students and educators the freedom to express themselves, collaborate in the world of education, and gain valuable experience in increasing the abilities of students and educators (Wigati, Sri Rahmawati, & Adi Widodo, 2018) and in addition, learning by

using. In addition, learning by using YouTube is much more fun, and students can also gain more benefits, such as developing public engagement and presentation skills. Youtube can also increase the creativity of students. The commentary and live streaming features on YouTube allow interactive learning because students can comment and provide opinions during learning (Smith, 2014). Delfisanur, Sari, Hasanuddin, & Ambiyar (2020) added that YouTube could be an alternative medium for distance learning. Educators are challenged to be more creative and innovative in the making learning through the videos provided. Szeto & Cheng (2014) added that youtube videos are an effective and useful tool for teaching at different school levels and subjects. The subject matter includes chemistry.

Chemistry subjects are some subjects that are less attractive to many students (Subagia, 2014). One of these chemicals is organic chemistry as part of the reaction mechanism, which according to Anzovino & Lowery Bretz (2015), is considered difficult by students. The assumption that chemistry is difficult to learn will ultimately make students less motivated to study chemistry further. Students who are not motivated to learn well will tend to be more passive when learning occurs than students who have good motivation in learning (Budiarawan, 2019).

According to Moskowitz & Grant (2009), motivation generally understands initiative and direction of behavior, mainly behavioral lessons. Motivation and the learning process have a close relationship. Motivation is at the core of human aspirations and achievements. Therefore. Motivation is essential in educational matters, and without a fighting spirit, nothing is impossible not only in education but also in daily life. Motivation is an effort to face any problem and feel challenged to acquire new knowledge (Gopalan, Bakar, Zulkifli, Alwi, & Mat, 2017).

According to Uno (2007), learning motivation has an understanding as internal and external encouragement from students when the learning process takes place. This drive will cause changes in behavior which can be categorized into several indicators.

The source of motivation which encourages someone to do what they want to do, according to Hurlock (1978), comes from interest. Interest tends to be interested in the attitude of one's soul, namely cognition, conation, and emotion, to see or pay attention to something (Ahmadi, 2007). Four indicators can show students' interest in learning: feelings of pleasure, student interest in learning materials, student attention, and student involvement (Slameto, 2010).

Research Method

The method of this research is explanatory research with a descriptive quantitative approach. The data is obtained from the results of survey data using Google Forms. Questionnaires were distributed to 100 students studying organic chemistry using YouTube as a distance learning platform. The scale used is a Likert scale with a range of 1 to 5 (Table 1).

Table 1
Likert Scale on Interest and Motivation Questionnaire

Assessment criteria	Scoring scale
Strongly agree	5
Agree	4
Doubtful	3
Do not agree	2
Strongly Disagree	1

(Fitriyani, Fauzi, & Sari, 2020)

Statements are divided into positive and negative, with indicators of interest consisting of attention, feelings of pleasure, and interest. This indicator is taken from the interest indicator, according to Slameto (2010), composed of four indicators, namely feelings of pleasure, involvement, interest, and attention. While on motivation, the indicators seen are enthusiasm,

independence, curiosity, and readiness. This indicator is taken from Safarati (2021) motivation indicator: concentration, curiosity, enthusiasm, independence, readiness, enthusiasm or encouragement, and never giving up. The results of the average percentage of interest and motivation obtained are then interpreted based on the interval table in Table 2.

Table 2
Criteria Average Percentage of Interest and Motivation

Assessment criteria	Scoring scale
0% - 19.99%	Very Bad
20% - 39.99%	Bad
40% - 59.99%	Enough
60% - 79.99%	Good
80% - 100%	Very Good

(Fitriyani et al., 2020)

Results and Discussion

In this study, survey data were produced on developing student interest and motivation while studying organic chemistry using the YouTube platform as an alternative during distance learning (PJJ) for five

consecutive weeks. In addition to survey data, interview data were also obtained to re-confirm the reasons for doubting or disagreeing with students regarding the statements given.

Interest

The interest questionnaire in this study was compiled based on four indicators of interest from Slameto (2010), namely feelings of pleasure, interest, attention, and involvement. The questionnaire has been compiled, then distributed to 100 students majoring in chemistry as students who learn to use YouTube as an alternative platform for distance learning (PJJ) in organic chemistry courses. Statements are prepared using a Likert scale measurement method of 1 to 5 and are taken for 5 learning meetings.

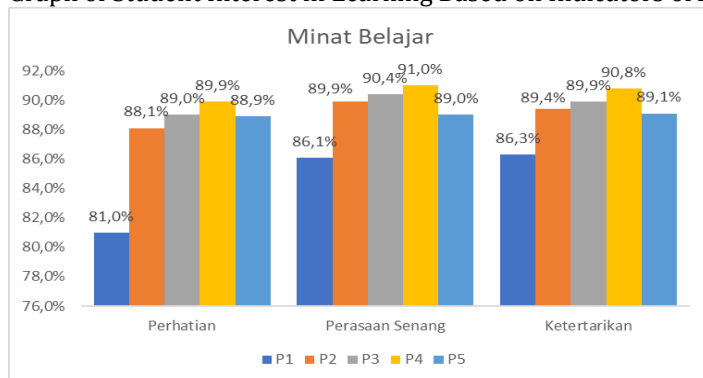
The attention of students during the lesson, according to Slameto (2010), shows an interest in the material being studied. An example of a student paying attention to the material being studied is listening to the teacher's explanation and taking notes on the material presented. The graph in Figure 1 shows the attention indicator. Compared to the first week, the second week increased 7.10%, the third and fourth weeks 0.9%, but the fifth week decreased 1%. The interview results with several students who gave

scores of 1 to 3 can be concluded that the decline was due to the complex calculations and equation material. Those were difficult to understand, so students found it challenging to pay attention to the explanation of the material afterward.

In the happy feeling indicator, there was an increase of 3.80% in the second week compared to the first week and continued with an increase of 0.5% in the third week and 0.6% in the fourth week, but in the fifth week, there was a decrease of 2%. Feelings of pleasure, according to Slameto (2010), will cause feelings of voluntary or not compelled in learning which is characterized by being happy to follow the lessons given, not having boredom, and being present on time before learning begins. The results of interviews with several students who gave scores of 1 to 3 were because very few students had discussions related to the material delivered via YouTube and considered the need for additional applications and videos related to daily life so that the material studied was not monotonous.

Figure 1

Graph of Student Interest in Learning Based on Indicators of Attention, Feelings of Pleasure, and Interest



In the third indicator, namely student interest, it can be seen that there was an increase of 3.10% in the second week when compared to the first week and continued with an increase of 0.5% in the third week and 0.9% in the fourth week, but in the fifth week, there was a decrease of 1,7%. This decrease occurred because some students considered the videos did not provide examples related to everyday life and only contained theories, explanations of reactions, and calculations. The material studied did

not provide new knowledge to students. This is in line with research conducted by Jyun & Hong (2010), which concludes that YouTube videos showing unusual chemical phenomena related to learning materials can increase students' interest in learning chemistry.

Motivation

The indicators in the motivation questionnaire in this study were taken from indicators in Safarati (2021) study, which

consisted of concentration, curiosity, enthusiasm, readiness, enthusiasm or encouragement, and never giving up. From the 7 indicators, 4 indicators were selected, namely enthusiasm, independence, curiosity, and readiness. This indicator is used to determine the use of Youtube as an alternative to distance learning (PJJ) chemistry. Questionnaire data were obtained from 100 students who studied organic chemistry using YouTube for 5 meetings.

Figure 2 shows the development of student motivation for 5 consecutive weeks. The first diagram shows the enthusiastic graph. According to Safarati (2021), enthusiasm or encouragement is related to the wishes of students. For example, to get the best value through effort and hard work from each task given both during and after learning. In the enthusiastic indicator, there was an increase of 7.80% in the second week compared to the first week and continued with an increase of 3.10% in the third week but began to decrease in the fourth week by 1.10%. The results of interviews with several students who scored 1-3 can be concluded that the decline in the fourth week was caused because students thought that materials considered not difficult and important did not need to be rewritten. After all, the youtube video could still be played back. In contrast, the decline in the fifth week was due to students having difficulty understanding the material. Hence, they

could not provide feedback on questions or cases given during learning.

Diagram 2 in Figure 2 is an indicator of independence. According to Safarati (2021), independence is essential to explore the aspects to be studied. Independence with learning outcomes has a significant relationship in either face-to-face or distance learning. One independent aspect is that students can answer or work on problems well. The data shows an increase of 14.10% in the second week compared to the first week and continued with an increase of 4% in the third week but began to decrease in the fourth week by 1.40% and by 1.20% in the fifth week. Based on the data, the decrease in the fifth week was caused because 2% of students agreed that the chemistry learning video on YouTube did not need to be repeated, 7% felt doubtful, 18% only agreed to be repeated, and the remaining 73% strongly agreed to be repeated. This figure is small when compared to the fourth week. Meanwhile, based on the results of interviews with several students who scored 1-3, it can be concluded that student interest in learning materials has decreased so that students choose not to repeat the YouTube video and look for other sources as learning materials. In addition, students judged the learning process to be too monotonous, so they chose not to watch YouTube videos according to the specified time.

Figure 2

Graph of Student Learning Motivation Based on 4 Observed Indicators

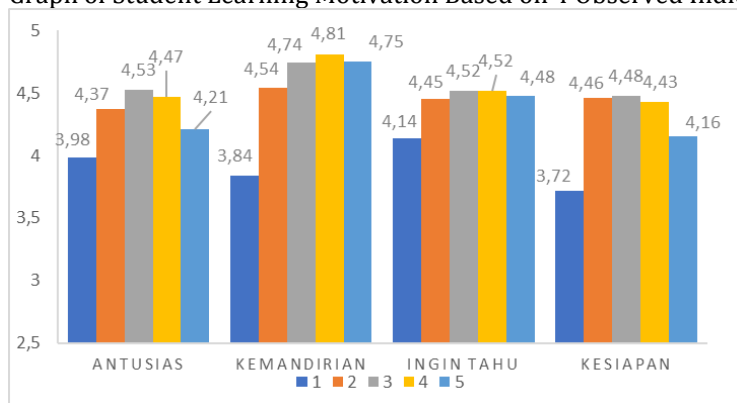


Figure 2 also shows student motivation data on the curiosity indicator

where there is an increase of 6.30% in the second week compared to the first week and

continued with an increase of 1.30% in the third week. Still, in the fourth week, there was no increase or decrease in students' curiosity and a decrease of 0.80% in the fifth week. Curiosity is the initial capital that students must own in the learning process. The high curiosity will encourage students to find things they want to know (Fitriyani et al., 2020). The interview results with several students who gave grades 1 to 3 can be concluded, a decrease in curiosity in the fifth week because students did not clearly understand the material provided. Very few students asked questions or discussed related material studied during the learning process. The students added that although no one asked questions or discussed during the learning process, the students continued to search for other references related to the material studied that day.

On the readiness indicator, the graph shows an increase of 14.90% in the second week compared to the first week and

continued with an increase of 0.30% in the third week but began to decline in the fourth week by 1% and by 5.40% at week five. According to Safarati (2021), readiness is the enthusiasm and readiness of students to answer and do the tasks given. Based on the data, the decrease in the fifth week was caused because only 34% thought they still strongly agreed to prepare other references before learning to use YouTube, and 36% thought they agreed. The remaining 20% were undecided, 9% thought they disagreed, and 1% thought they strongly disagreed. The interview results showed that students no longer prepared other references related to the material to be studied because of the limited information obtained, especially in Indonesian. At the same time, the available books did not explain clearly, and even difficult to understand the material to be studied.

Figure 3

Graph of the Average Interest and Motivation of Students After Studying Through YouTube for 5 Meetings

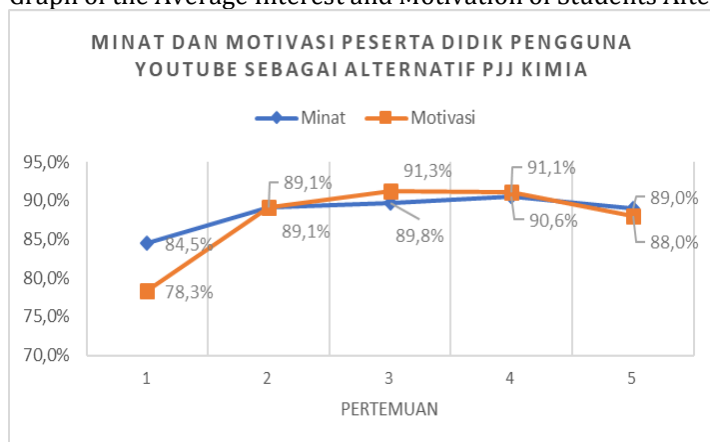


Figure 3 also shows the average increase in interest in students in the second week of 4.7% compared to the first week. This increase occurs although it is not significant in the third and fourth weeks, respectively 0.6% and 0.8%. However, in the fifth week, there was a decrease of 1.6%. The same thing happened to students' learning motivation were in the second week. There was an increase of 10.8%, which continued until the third week of 2.2%. However, the learning motivation decreased by 0.2% in the fourth week and 3.2% in the fifth week.

The open questionnaire data and interviews conducted can be known that the average student began to feel bored and suggested that YouTube would be better if it were added with other applications or media that can support the learning process. In addition, chemistry videos related to everyday life, especially in practicum courses, also need to be considered during learning. This result is in accordance with research conducted by Jyun & Hong (2010), namely Youtube videos containing daily life are one of the factors for the emergence of

interest and supporting factors in students in studying chemistry. Although on further questions, some students agreed that Youtube videos could not replace direct practicum.

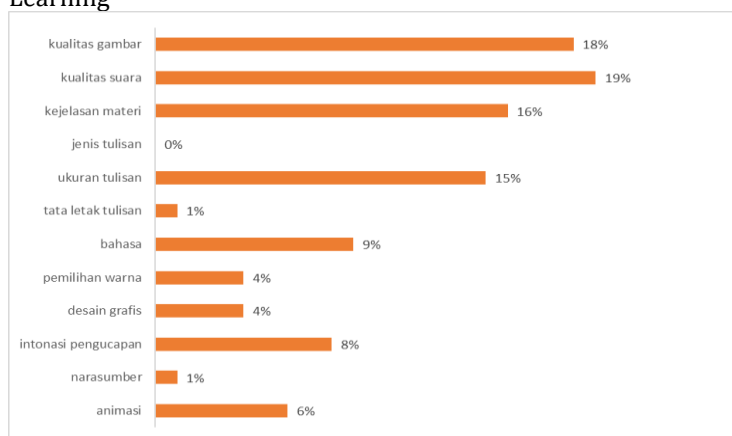
The importance of media variations to present students' motivation and interest in learning is in accordance with research conducted by Niswaty & Arhas (2019), which states that the large variety of media used

can affect the quality of learning without compromising the role of educators as users of learning media.

Students also responded that YouTube as a learning video needs to pay attention to several factors so that the videos they watch do not make the learning process tedious, namely sound quality, image quality, material clarity, and writing size (Figure 4).

Figure 4.

Student Responses to Factors That Need to be Considered in Making Youtube Videos for Chemistry Learning



In addition to these factors, students also provide other factors such as language, pronunciation intonation, animation, graphic design, and color selection. The chemistry learning videos displayed on YouTube look more exciting and not boring. This is in accordance with research conducted by Liwanag, Rural, School, Joyce, & Ramirez (2019). One thing that needs to be considered in making Youtube videos is the audio and visual appearance to feel interested and have fun in learning. Rahmatika, Yusuf, & Agung (2021) added that the selection of videos on YouTube also needs to pay attention to the suitability of the material, age, and psychological development of students so that the material presented is easy to understand.

Students' average interest and motivation after studying organic chemistry using YouTube for 5 meetings are shown in Figure 3, which is 88.6% on interest and 87.6% on learning motivation, which is categorized as very good. This is in line with Mujianto's (2019) research, which concluded

that YouTube has a significant positive role in increasing interest and motivation in learning chemistry.

Conclusion

From the data obtained, it can be concluded that YouTube as an alternative platform for distance learning (DL) is considered very good for positively impacting students' interest and motivation in studying chemistry. However, its use must be accompanied by applications or other media that can support the learning process, especially on material related to practicum. In addition, in using YouTube, it is necessary to pay attention to aspects such as sound quality, image quality, size of writing, and clarity of material to make the material presented easy to understand, clear, and attractive.

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