EFFECTIVENESS OF INSTAGRAM REELS MEDIA IN CHEMISTRY LEARNING ON STUDENT LEARNING MOTIVATION

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Abstract. *In the 21st century, learning is increasingly sophisticated but the utilization of technology by teachers is not optimal so that students are less motivated to learn chemistry and have an impact on learning outcomes. Implementing Instagram reels as a learning resource can make chemistry learning more interesting, creative, and innovative so that it is possible to increase students' chemistry learning motivation. The purpose of this study was to determine how the effectiveness of Instagram reels as a learning resource on students' chemistry learning motivation. The research method used was quasi experiment with nonequivalent control group design. The instrument used was a learning motivation questionnaire. The Mann Whitney test results showed an Asymp. Sig. value of 0.000 <0.05 so that H_0 is rejected and H_1 is accepted. Thus, it can be concluded that the implementation of Instagram reels as a learning resource effectively increases students' chemistry learning motivation.*

Keywords: *Instagram Reels, Learning Resources, Learning Motivation*

INTRODUCTION

The 21st century is a condition that can be characterized by rapid developments in technology, information, and communication [1]. Entering the 21st century, technology has entered the field of education, especially in learning activities. Teaching and learning activities has a lot of learning resources, learning media, and teaching materials that have an important role in achieving learning objectives [2]. In the past, learning activities at school were limited to face-to-face meetings and learning resources only from teachers and books. Along with the times, learning activities are also increasingly sophisticated not only relying on face-to-face meetings, teachers, and books but have now begun to involve technology [3].

Learning activities in high school are chemistry subjects. Chemistry is a very complex science that contains theoretical and mathematical knowledge, so that it becomes the students' mindset that chemistry is difficult, difficult, and full of formulas [4]. Based on observations that have been made by three chemistry teachers, in learning chemistry teachers only utilize books as learning resources. Therefore, the learning resources used are less varied and innovative in the use of technology, information, and communication. This is because teachers do not explore learning resources that can be used by utilizing technology in the 21st century. This then causes students to be less enthusiastic and less motivated when learning in class. Students only try to fulfill class attendance without having the motivation to learn, of course, it will hinder students' understanding and learning outcomes of the material to be studied next because chemistry is a science that is related to one another.

Learning motivation in students is very important when because learning motivation is the internal and external drive of students to learn attitudes, usually using several indicators or protective factors. These indicators include desire and desire to learn; encouragement and needs in learning; hopes and ideals for the future; appreciation in learning; interesting activities in learning; and a conducive learning environment that makes it possible to learn [5]. The existence of motivation can cause students to be more encouraged to study chemistry hard. The desire and effort to learn on their own initiative will produce maximum learning

results. Therefore, learning motivation in students needs to be strengthened continuously so that students have strong learning motivation so that the learning outcomes they achieve can be optimal [6].

In order t achieve optimal chemistry learning outcomes, learning activities can create conditions or processes that direct students to learn with relevant learning resources so that it will bring up student learning motivation [7]. Learning resources are one of the important roles in improving the quality of learning. Learning resources are equipment or tools in the form of data, people, or objects used by teachers, lecturers, tutors, or students in improving the learning process in accordance with learning objectives [8]. Teachers are required to be able to keep up with technological developments to have quality in terms of knowledge, skills, guiding, and educating creative and innovative ones so that they can foster student learning motivation. Students are also required to keep up with technological developments so that students can receive learning materials from the use of technology, not only from teachers. Technological developments provide many alternative learning resources that can be used in the process of teaching and learning activities, one form of technological development is the use of social media learning resources in the form of the Instagram platform.

Instagram is a social media platform used by its users to share information in the form of images, photos, and videos [9]. The Instagram reels feature is one of the new features released by Instagram in 2021 which is similar to the TikTok application. Instagram reels is a feature that allows users to create short videos of short duration with other aspects added. This feature can design several photos and videos to make them more attractive with several tools in it. The tools contained in the Instagram reels feature are audio, video duration, speed, effects, video layout, and timer. With some of these tools, photos and videos become more interesting [10].

With the Instagram platform and the Instagram reels feature, chemistry learning can be made as interesting as possible by providing an explanation in the form of a video about chemical kinetics material, where chemical kinetics material cannot be observed directly, chemical kinetics material requires accurate visualization to be more realistic so that it is easier for students to understand. Visualization can help students to be able to observe the phenomena that occur, collect data, and draw conclusions from the videos or images presented and increase student learning motivation [11]. Therefore, to explain the material, animated video can be used as a form of visualization of the concept of reaction rate, collision theory, factors that affect the reaction rate, and the reaction rate equation. The video can be accessed easily by students so that students are expected to be enthusiastic and highly motivated to learn chemistry so that learning outcomes increase.

This study aims to determine the effectiveness of Instagram reels as a learning resource on students' chemistry learning motivation. Specifically, this research will focus on the implementation of Instagram reels learning resources on chemical kinetics material to increase students' extrinsic motivation to learn.

METHODS

The research method used is the quasi-experiment research method, where this quasi-experiment method is a development of the true experiment design method where in this design there is a control group, but it cannot function fully to control external variables that influence the implementation of experiments [12]. This study used Nonequivalent Control Group Design, where in this study the experimental group and control group were not randomly selected [12]. The research design as shown in Table 1.

Table 1. Research Design

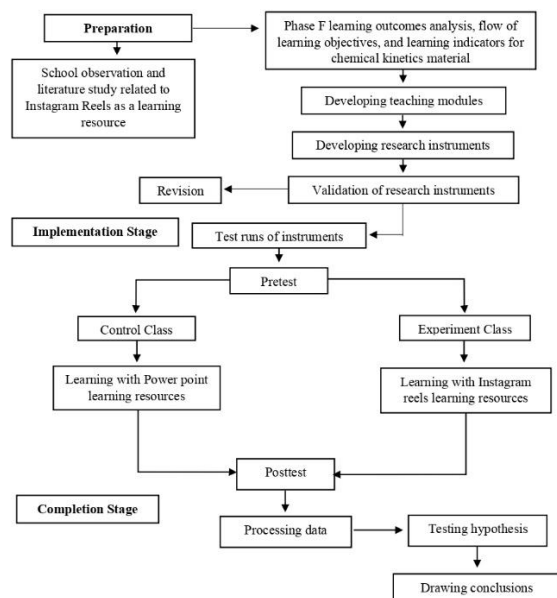| Group	*Pretest*	Independent Variable	*Posttest*
Experiment	O^1	X^1	O^2
Control	O^1	X^2	O^2

Description:

O^1 = Initial comprehension test

O^2 = Final comprehension test

X^1 = Teaching using Instagram reels learning resources treatment

X^2 = Teaching using the Power point learning resource treatment

The research procedure went through three stages as shown in Figure 1

Figure 1. Research Procedures

The research variables consisted of independent variables in the form of Instagram reels learning resources and dependent variables in the form of student chemistry learning motivation.

This research was conducted in September - October 2024. The research was conducted at SMAN Tangerang Regency, which is located at Pondok Permai, Jl. Arwana Raya, Kuta Baru, Kec. Pasar Kemis, Tangerang Regency, Banten 15560. The population in this study were all students of grade XI of SMAN Tangerang Regency. The samples used in this study were class XI.1 (experimental class) and class XI.3 (control class) which were selected using purposive sampling technique. The purposive sampling technique is a sampling technique with certain considerations [13].

The data collection technique used in this study was a questionnaire. The questionnaire is a data collection technique that is done by giving a set of written questions to respondents to answer [14]. The questionnaire was used to measure student learning motivation in accordance with learning motivation indicators,

namely 1) desire and desire to succeed; 2) encouragement and needs in learning; 3) hopes and future goals; 4) appreciation in learning; 5) interesting activities in learning; 6) conducive learning environment [5]. Measurement is carried out using a Likert scale with 4 answer options, namely strongly agree (SA), agree (A), disagree (D), and strongly disagree (SD). The answer to each statement using a Likert scale has a level from most positive to most negative with a range of 4-1. These scoring provisions are shown in Table 2 [15].

Table 2. Learning Motivation Instrument Scoring Requirements

Likert Scale	Item Score	
	Positive	Negative
Strongly Agree (SA	4	1
Agree (A)	3	2
Disagree (D)	2	3
Strongly Disagree (SD)	1	4

The student learning motivation questionnaire instrument consists of 20 valid statement items and four answer categories with a score range of 1-4. The lattice of learning motivation questionnaire instruments is shown in Table 3.

Table 3. Learning Motivation Questionnaire Instrument Grid

Aspects	Indicator	Item Number		Number of Item
		Positive	Negative	
Chemistry Learning Motivation	Desire and desire to succeed	1, 2	3, 4	4
	Encouragement and needs in learning	5, 6	7	3
	Hopes and future goals	8, 9	10	3
	Appreciation in learning	11	12	2
	Interesting activities in learning	13,14, 15	16, 17	5
	Conducive learning	18, 19	20	3

environment	
Number of Question	20

The learning motivation questionnaire has a reliability coefficient of 0.822 which can be stated that the reliability is very high so that the instrument is suitable for research. The learning motivation questionnaire containing 20 statements was given to experimental and control class students during the pretest and posttest.

The results of the questionnaire data were determined based on a questionnaire that represented indicators of learning motivation and each indicator on the question was given a score of 1-4. To determine the percentage value using the formula, as follows:

$$P = \frac{f}{n} \times 100\%$$

Description:

P = Percentage value of each indicator

f = Raw score obtained

n = Ideal maximum score

The percentage value of each indicator obtained is then interpreted based on the criteria shown in Table 4 [16].

Table 4. Learning Motivation Questionnaire Criteria for Each Indicator

Percentage	Criteria
76% - 100%	Good
56% - 75%	Fair
41% - 55%	Not Good
0% - 40%	Not Well

Data analysis in this study used the Mann Whitney test. Data analysis begins with prerequisite tests, namely normality test and homogeneity test. The statistical hypotheses in this study are:

H_0 = The implementation of Instagram Reels as a learning resource is not effective in increasing students' motivation to learn chemistry.

H_1 = The Implementation of Instagram Reels as a learning resource is effective in increasing students' chemistry learning motivation.

RESULT AND DISCUSSION

At the beginning of the study, researchers conducted a needs analysis to find out the needs of teachers and students related to what kind of learning resources are needed for learning in chemistry. The instrument used for needs analysis is a questionnaire. To find out the needs of teachers and students, researchers distributed needs analysis questionnaires to teachers and students related to learning resources. The needs analysis in the form of a questionnaire aims to find out the problems in the learning process, the difficulties experienced, and the media used during learning [17]. Based on the results of the teacher and student needs analysis questionnaire, all chemistry teachers and most students have not maximally utilized Instagram in chemistry learning where with these problems it is hoped that there will be interesting learning resources that make it easier and increase student learning motivation. One of the learning resources that can be implemented is Instagram reels. Most teachers and students of SMAN Tangerang Regency have never used Instagram reels as a chemistry learning resource. Thus, teachers and students are interested in the existence of Instagram reels learning resources because it can be an innovation in increasing student learning motivation.

In this study, the instrument used was a learning motivation questionnaire using a Likert scale of 1-4. The instrument was given at the beginning of the meeting (pretest) to determine students' initial learning motivation and at the end of the meeting (posttest) to determine students' final learning motivation. Based on the research that has been conducted, researchers used two XI classes as research samples. The average value of the pretest of class XI.1 on the learning motivation questionnaire with an average value of 67. While the average value of the pretest of class XI.3 on the learning motivation questionnaire with an average value of 67.3. Based on these data, class XI.1 as an experimental class by implementing Instagram reels learning resources while class XI.3 as a control class by implementing Power point learning resources. Class XI.1 was chosen as the experimental class because it had a lower average pretest score

compared to class XI.3. This is because the sampling technique used in this study is nonprobability sampling with purposive sampling technique, which is a sampling technique with certain considerations [13]. Descriptive data of learning motivation pretest data is presented in Table 5 as follows.

Table 5. Descriptive Data of Pretest Questionnaire of Learning Motivation

Data	Pretest	
	Experiment Class	Control Class
Number of Student	47	47
Lowest Score	45	55
Highest Score	86	83
Average	67	67
Standard Deviation	8,772	6,426

The pretest data has gone through a prerequisite test which shows that the experimental class learning motivation questionnaire is normally distributed while the control class is not normally distributed and both classes have homogeneous data variance. In the hypothesis test, researchers conducted a nonparametric test using the Mann Whitney test. Based on the results of the Mann Whitney test, the pretest data has an Asymp. Sig. (2-tailed) of 0.862> 0.05 so that H_0 is accepted and H_1 is rejected. Thus, there is no significant difference between the experimental class and the control class on the pretest results of the questionnaire instrument. This can be caused because the experimental and control classes still have relatively similar initial conditions before being given treatment.

After conducting the pretest, researchers conducted learning according to each class, where the experimental class implemented Instagram reels learning resources while the learning class implemented Power point learning resources. In the experimental class, researchers gave students a link to Instagram video reels (@sumberbelajar_kimia) which explained related analogies and chemical kinetics material then students were divided into eight groups during the learning process. While in the control class after conducting a pretest, the researcher explained chemical kinetics material using Power point, then students were divided into eight groups during the learning process. This learning was carried out as many as 4 meetings with each 4 lesson hours / meeting.

At the fourth meeting, the Posttest was carried out giving a learning motivation questionnaire. The following descriptive data of the learning motivation questionnaire posttest is presented in Table 6 as follows.

Table 6. Descriptive Data Posttest Learning Motivation Questionnaire

| Data	Posttest	
	Experiment Class	Control Class
Number of Student	47	47
Lowest Score	64	58
Highest Score	98	89
Average	78	71
Standard Deviation	7,980	7,931

The posttest data was tested and the results of the analysis showed that the learning motivation questionnaire was not normally distributed and had homogeneous data variance. Based on the results of the Mann Whitney test, the posttest data of the learning motivation questionnaire has an Asymp. Sig (2-tailed) of 0.000 so that H_0 is rejected and H_1 is accepted because the value of Asymp Sig. (2-tailed) <0.05. Thus, the implementation of Instagram reels as a learning resource is effective on students' chemistry learning motivation. This is in line with previous research conducted by Widarti et. al. [18] stated that the use of Instagram to support learning can increase student motivation and learning outcomes regarding reaction rates.

This study used six indicators of learning motivation, namely desire and desire to succeed, encouragement and needs in learning, future hopes and ideals, appreciation in learning, interesting activities in learning, and a conducive learning environment [5].
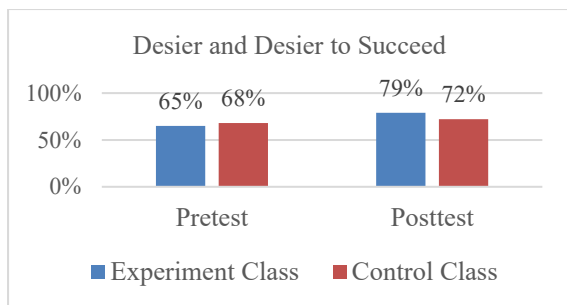
**Figure 2. Desier and Desier to Succeed**

Based on Figure 2, in the first learning motivation indicator, the experimental class experienced a change in motivation from 65% to 79% and the control class also experienced a change in motivation from 68% to 72% between before and after treatment. The increase in scores in the experimental class was due to the interest and desire of each student to continue learning, most students tried to learn material from various learning sources so that knowledge increased. This is in line with previous research conducted by Rokhim et. al. [19] stated that increased interest in learning can improve learning outcomes and learning motivation. In this study, each group succeeded in making a video of the application of the reaction rate in everyday life, a practicum report video, and a video of working on the reaction rate equation exercise. This triggers students' enthusiasm to succeed, especially to succeed in completing tasks properly and correctly. Students have high motivation when students are eager to complete tasks on time and want to get the best grades [20]. This will encourage each group member to support the success of their group, so that the success of the group is basically the same as the success of each group member.
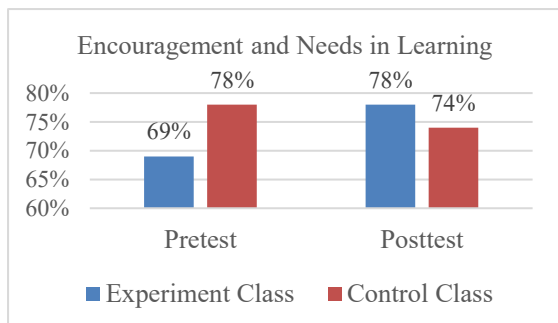
Figure 3. Encouragement and Needs in Learning

The second indicator is the drive and need to learn. Students who are motivated to learn have a strong reason to learn and consider that learning is a very important need. Students who are encouraged to learn stem from the need to become educated and knowledgeable people, so motivation arises from self-awareness with essential goals [21]. This relates to the previous indicator, namely if students have the desire and desire to succeed, then they will consider learning a necessity. Based on Figure 3, the second indicator of learning motivation in the experimental class experienced a change in motivation, namely from 69% to 78% and the control class also experienced a change in learning motivation from 70% to 74% so that learning motivation can increase with the encouragement and need to learn. The increase in the percentage of indicators in the experimental class can be caused by the implementation of Instagram reels as a learning resource. The use of Instagram reels can help students visualize chemical concepts in chemical kinetics material which can strengthen student understanding.
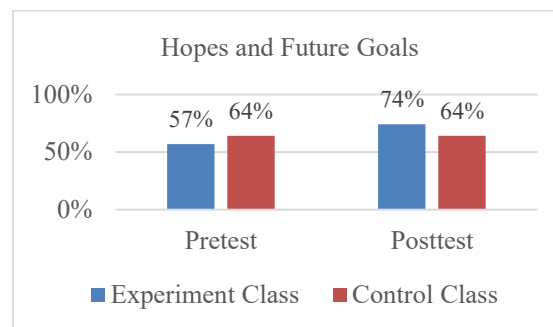
Figure 4. Hopes and Future Goals

The third indicator is future hopes and aspirations. Based on Figure 4, the third indicator of learning motivation in the experimental class experienced an increase in motivation, namely from 57% to 74% and the control class did not experience a change of 64%. A significant increase in the percentage of indicators after treatment indicates that there is a positive influence of future hopes and aspirations on student learning motivation. Hopes and ideals that are accompanied by individual development and growth will strengthen intrinsic and extrinsic learning motivation, each student has clear goals and motivation to achieve better results in learning [6]. High hopes and aspirations can foster students' desire to achieve academic success.
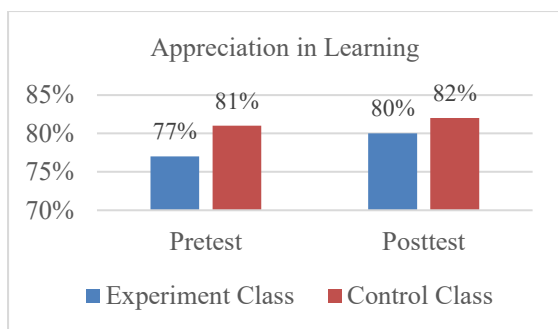
Figure 5. Appreciation in Learning

The fourth indicator is appreciation in learning. Awards given by teachers, families, and the environment can provide learning encouragement for students because the award makes students feel proud of their abilities so that learning becomes focused and fun. Based on Figure 5, the fourth indicator of learning motivation in the experimental class increased from 77% to 80% and the control class also increased from 81% to 82%. The increase in learning motivation occurred because the teacher gave awards to the most active groups in the class using a point system. Giving awards to students who are active in class can increase student motivation to always be active and spread the spirit of learning to their friends [22]. Thus, students who initially felt lazy to learn were finally infected with their passion for learning.
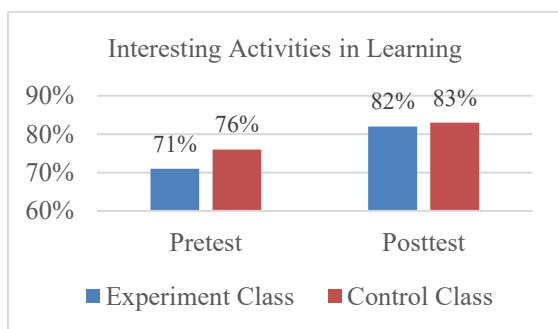

Figure 6. Interesting Activities in Learning

The fifth indicator is interesting activities in learning. Based on Figure 6, the experimental class experienced an increase of 11% in the indicator of interesting activities in learning after implementing Instagram reels as a learning resource, namely the motivation score increased from 71% to 82%. Meanwhile, the control class also experienced an increase from 76% to 83%. This shows that interesting

activities in learning such as the use of Instagram reels as a learning resource have a significant positive influence on student learning motivation. This is in line with previous research conducted by Widarti et. al. [18] stated that the use of Instagram social media in learning chemistry can attract students' interest which is considered less interesting to be more interesting. The use of Instagram reels as a learning resource during learning activities provides a learning experience that can be visualized with animated videos as a form of visualization of the concept of reaction rate, collision theory, factors that affect the reaction rate, and the reaction rate equation. The Instagram video reels can increase enthusiasm and motivation to learn chemistry.
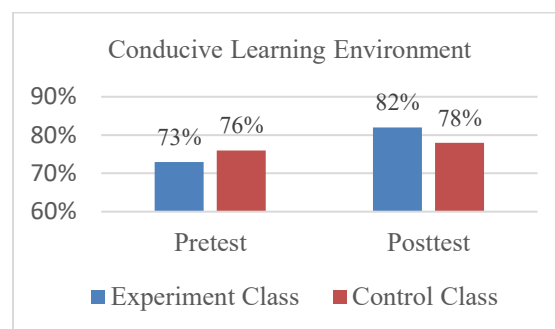

Figure 7. Conductive Learning Environment

The sixth indicator is a conducive learning environment. Learning motivation will encourage students to do something to achieve a desired goal. If students are encouraged to learn, an effective learning will be formed which in turn will make the learning atmosphere comfortable [23]. Based on Figure 2, the experimental class experienced an increase of 9% in the conducive learning environment indicator after implementing Instagram reels as a learning resource, namely the motivation score increased from 73% to 82%. Meanwhile, the control class also experienced an increase from 76% to 78%. This shows that a conducive learning environment has a significant role in increasing students' learning motivation. A conducive learning environment can affect students' learning motivation, motivation will be stimulated if the classroom atmosphere goes well [24]. In addition, a conducive classroom atmosphere

can foster high interest, strong motivation, and student learning endurance.

Based on the results of this study, it is strengthened by research conducted by Widarti et. al. [25] which states that learning media integrated with Tiktok and Instagram social media can increase student learning motivation in group I and II qualitative analysis material. In addition, in line with previous research conducted by Rohim & Yulianti [26], it shows that Instagram-assisted learning can increase student learning motivation and learning outcomes. Thus, the results of this study obtained that students' learning motivation increased with learning using Instagram reels.

CONCLUSIONS AND SUGGESTIONS

The results of this study indicate that students who implement Instagram reels as a learning resource experience a significant increase in learning motivation as evidenced by the results of hypothesis testing using the Mann Whitney test which obtained an Asymp. Sig. (2-tailed) of 0.000, so H_0 is rejected and H_1 is accepted because of the Asymp. Sig. (2-tailed) <0.05. This states that in the posttest results there is a significant inequality between students who learn to implement Instagram reels and students who learn not to implement Instagram reels. Thus, it can be concluded that the implementation of Instagram reels as a learning resource effectively increases students' chemistry learning motivation.

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