The Use of Integrated Learning Media of TikTok and Instagram Social Media on Student Learning Motivation on Cation Qualitative Analysis Materials Groups I and II

Hayuni Retno Widarti[*1], Munzil[2], Neena Zakia[3], Deni Ainur Rokhim[4], Afis Baghiz Syafruddin[5], Zalfa Adhya Rachmanita[6]

[1,2,3,4,5,6] Jurusan Kimia, Universitas Negeri Malang, Jl. Semarang No.5, Kota Malang, Indonesia

**Corresponding author: hayuni.retno.fmipa@um.ac.id*

Abstract. *This study was conducted to determine the effect of using integrated learning media TikTok and Instagram in increasing students' learning motivation in qualitative analysis materials for groups I and II. The research method used is descriptive qualitative research method using a distributed questionnaire to determine the increase in students' learning motivation. This research was conducted in one of the State Vocational High Schools in Malang City which involved 29 students of class XII Analytical Chemistry 1. Data analysis was in the form of a qualitative test on students' learning motivation. The results of the study indicate that the use of TikTok and Instagram learning media can increase students' motivation to study qualitative analysis materials for groups I and II. The existence of integrated learning media for TikTok and Instagram social media, allows students to learn material anytime and anywhere.*

Keywords: *learning motivation, qualitative analysis, Instagram, TikTok*

INTRODUCTION

Education is an important aspect of human life. The success of education is influenced by the teaching and learning process. The teaching and learning process becomes a system in learning. The learning system consists of several components that interact with each other to obtain an effective interaction. Dick and Carey (2005) suggest that the components in the learning system are students, instructor (teacher), learning materials and learning environment [1].

The world of education and the learning process has undergone enormous changes along with technological advances. The development of information/communication technology affects the skills required by future jobs and how people learn to prepare for these future jobs. As digital devices have become very affordable for most people, they have become a part of people's daily lives, including learning [2]. The application of technology/ICT in the learning process can be a solution for students and teachers in critical thinking, competency in various fields, decision making, dealing with dynamic situations, as well as learning and developing effective communication [3].

The report from the Association of Indonesian Internet Service Providers (APJII) explains that internet users in the last 5 years (2018-2022) have increased significantly. Data shows that internet users in 2021-2022 (data collected for the period January 11 - February 24) reached 210,026,769 people out of a total population of 272,682,600 Indonesians (77.02% of the total population). The percentage of internet users based on education level is 85.43% of users who have graduated from junior high school and equivalent or package B, and 93.75% of users who have graduated from high school/vocational school and equivalent or package C. [4]. This rapid technological development can be used for educational purposes. One of the most common digital technologies used by most people is social media. Social media can be used as a medium of learning, especially in chemistry subjects.

Many studies discuss the use of social media as a learning medium. In addition, since the Covid-19 pandemic, face-to-face learning

has shifted to distance learning. Based on the results of research conducted by Pujiono (2021) it was found that social media is a learning medium that is relevant in becoming a bridge or intermediary between teachers and students in today's digital era. One of the social media that can be used as learning media is TikTok and Instagram [5].

Research conducted by Ramdani, et al. (2021) show that TikTok can be an effective, interesting, interactive, and innovative learning media in online learning that can accommodate the abilities of students in the 21st century. TikTok can make it easier for educators to deliver material as interesting as possible with the various features provided [6]. Pujiati, H., and Tamela, E. (2019) stated that Instagram has an important role in helping students to increase their motivation in learning. Instagram helps students in encouraging them to learn English and even improving their knowledge and skills [7].

Chemistry is defined as the study of composition, structure, properties, changes in matter, and the energy that accompanies these changes [8]. Basically, chemistry has two aspects. First, the visible and invisible aspects. Visible aspects can become concrete facts, but invisible aspects cannot become concrete facts, but must be logical [9]. Therefore, chemistry studies the concrete and the abstract in a single unit. It is this invisible and abstract chemical aspect that often makes it difficult for students to understand the material.

One branch of chemistry is analytical chemistry. Analytical chemistry deals with the chemical characterization of matter to answer four basic questions about a sample material, “What? Where? How many? And What is the arrangement, structure, or form?” [10]. Based on its purpose, analytical chemistry is classified into qualitative analysis and quantitative analysis. Qualitative analysis states the presence of an element or compound in the sample, while quantitative analysis states the number of elements or compounds contained in the sample in numerical terms [11].

Qualitative analysis of group I and II cations is one of the materials studied in analytical chemistry. Kurniasih and Rahayu, (2017) suggest that understanding analytical chemistry is needed to be able to think critically, logically, creatively, and innovatively. But the facts show that students still have difficulty in this case [12]. This is in line with the findings from research conducted by Fathonah et al. (2015), where 53.33% of the 30 students of SMK Bhakti Mulia Wonogiri chose qualitative analysis as material that was difficult to understand. [13]. In addition, the results of observations made by Widarti et al. (2021) on analytical chemistry teachers at SMKN 7 Malang in 2020, showing that qualitative analysis material is one of the most difficult materials to teach [14]. To understand analytical chemistry material, learning media integrated with social media TikTok and Instagram can be used with a multi-representational approach.

There are 3 levels of representation, namely macroscopic, submicroscopic, and symbolic representations. Macroscopic representation is the level of concrete representation that can be observed with the five senses such as color, temperature, pH, and the formation of precipitates. Submicroscopic representations are abstract levels such as atomic and molecular representations of processes that depict invisible processes in macroscopic representations. While the symbolic representation is a chemical language in the form of symbols, rate equations, chemical formulas, pictures, and numbers to explain at the molecular level. The three representations complement each other to explain chemical phenomena [15].

This study aims to determine the effect of using TikTok and Instagram integrated learning media in increasing student learning motivation in qualitative analysis material groups I and II.

METHOD

The research method used is descriptive qualitative. The research design is described as follows:

This research was conducted in one of the State Vocational Schools in Malang City. This study involved 29 students of class XII in Analytical Chemistry 1. The learning media used are social media-based learning media that have been validated by experts. The media is declared fit for use.

This research was conducted from August to September in the odd semester of the 2022/2023 school year in 3 meetings. The instrument used is a student learning motivation

questionnaire. The material taught is qualitative analysis of group I and II cations.

Data collection techniques include the preparation stage, the implementation stage, and the final stage. At the preparation stage, the preparation and validation of research instruments were carried out, preparation of research permit files, and distribution of learning motivation questionnaires before the operational test.

The implementation phase includes the implementation of learning activities using TikTok and Instagram-based learning media. At the end of the lesson, a learning motivation questionnaire was distributed after the operational test to determine the effect of using social media-based learning media TikTok and Instagram on students' learning motivation.

In the final stage, the research data analysis, conclusion drawing, and report preparation were carried out. The data processing technique used is a qualitative test of students' learning motivation.

RESULT AND DISCUSSION

Student learning motivation is the main focus to be analyzed in this study. The student's learning motivation analyzed is the learning motivation that appears in the qualitative analysis learning of groups I and II by using social media-based learning media TikTok and Instagram.

The data were obtained from a motivational questionnaire distributed to students before and after the operational test. The following is an analysis of student learning motivation after the application of social media-based learning media TikTok and Instagram in learning qualitative analysis of groups I and II:

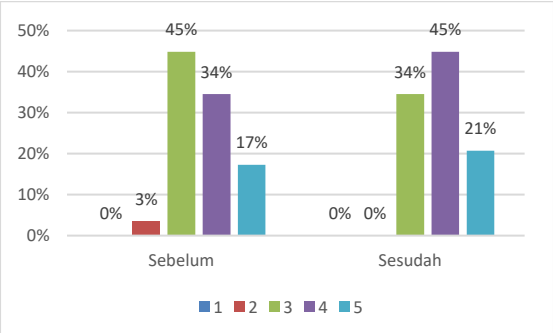

Figure 1 Interest in Studying Materials Qualitative Analysis of Group I and II Cations

In Figure 1, there is a significant increase in the interest in studying the qualitative analysis of group I and II cations. Before the operational test, 45% of students chose scale 3. After the operational test, as many as 45% of students chose scale 4. The results showed that classes using TikTok and Instagram integrated learning media were more interested in studying qualitative analysis material for groups I and II after the test. This is reinforced by 21% of students choosing a scale of 5 after the operational test.

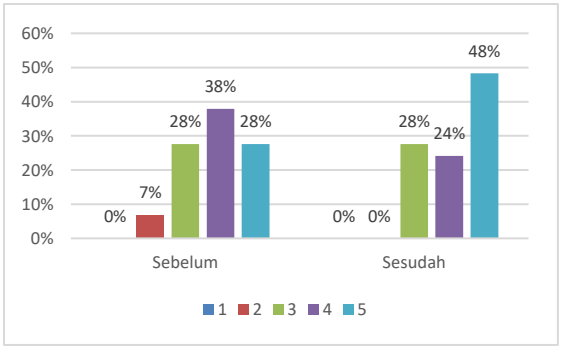

Figure 2 Preparation of Learning Equipment Before Learning

In Figure 2 regarding learning equipment before the teacher enters the classroom, there is a significant increase. As many as 38% of students chose a scale of 4 before the operational test. After the operational test, 48% of students chose a scale of 5. This shows that the use of social media-based learning media encourages students to prepare themselves before learning begins.

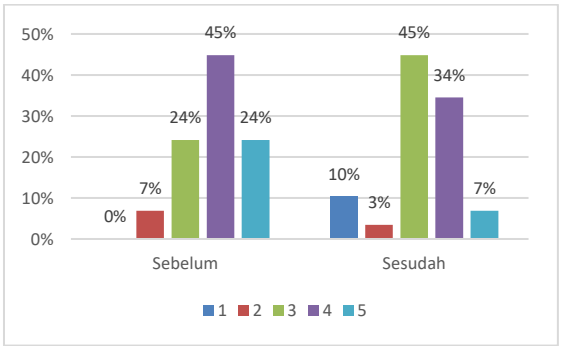

Figure 3 Pay Attention to The Material Being Explained

In figure 3 regarding paying attention to the material explained by the teacher, there is a decrease. Before the operational test as many as 45% of students chose scale 4. After the

operational test, 45% of students chose scale 3. Based on these results, the decline in classes using integrated learning media TikTok and Instagram was caused by students being distracted when using these learning media so that students paid less attention the material explained.

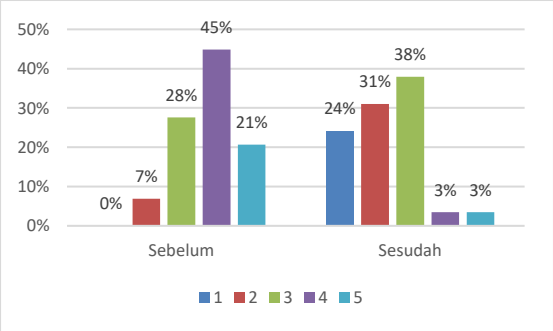

Figure 4 Recording the Material Described

In Figure 4, regarding recording the material explained by the teacher, there is a decrease. Before the operational test, as many as 45% of students chose a scale of 4 and 21% of students chose a scale of 5. After the operational test, the results of the questionnaire were dominated by students who chose a scale of 3, namely 38% of students. In addition, as many as 31% of students chose scale 2 and 24% of students chose scale 1. It can be seen that classes using integrated learning media TikTok and Instagram do not feel the need to take notes on the material explained. This is because the material can be accessed at any time.

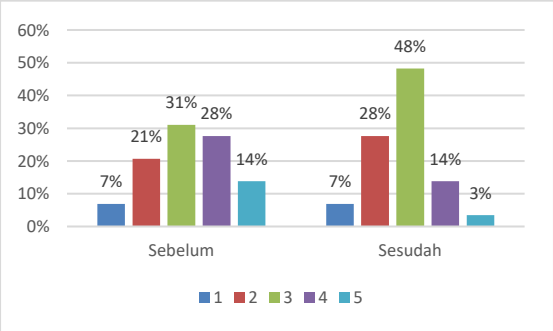

Figure 5 Activeness in the Independent Learning Process at Home

In Figure 5, regarding the activity in the independent learning process at home, there is no significant change after the use of integrated learning media TikTok and Instagram.

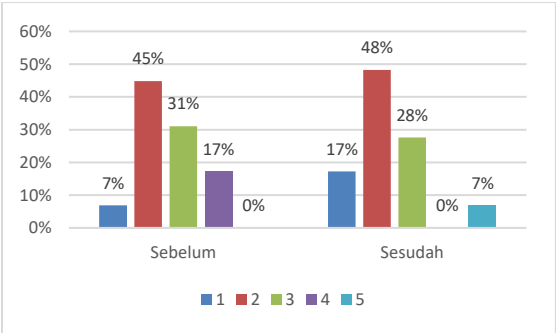

Figure 6 Don't Think About The Relationship Of Qualitative Analysis Of Group I And II Cations With Daily Life

In Figure 6, regarding not thinking about the relationship between qualitative analysis of group I and II cations with daily life, there was a not too significant increase. Before using social media-based learning media, students who chose scale 2 were dominated by 45%, students who chose scale 3 were 31%, and 17% of students chose scale 4 for the results of the questionnaire. After using social media-based learning media, the results of the questionnaire were dominated by students who chose scale 2, which was 48%, students who chose scale 3 were 28%, and 17% of students chose scale 1. This shows that there are TikTok and Instagram-based learning media encourage students to think about the relationship between learning materials and everyday life.

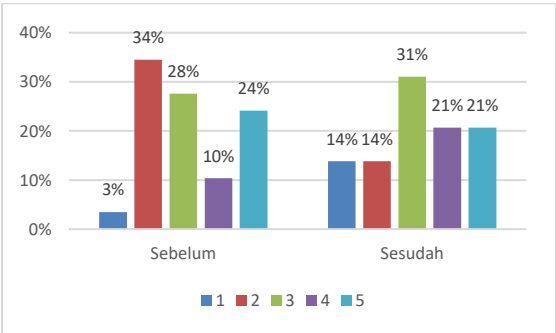

Figure 7 Concerns Other Students Have Better Achievements

Figure 7 concerns the concerns that other students have better performance. In classes that use integrated learning media TikTok and Instagram, 31% of students choose a scale of 2, 28% of students choose a scale of 3, and 24% of students choose a scale of 5 before the operational test . After the operational test, 31% of students chose a scale of 3, 21% of students chose a scale of 4, and 21% of students chose a scale of 5. In classes that use social media

integrated learning media, there has been an increase. This shows that the use of social media as a learning medium increases students' learning motivation to get good grades.

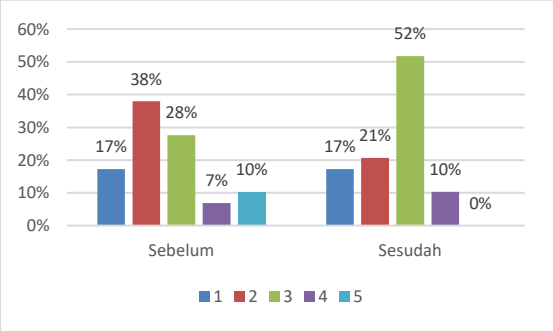

Figure 8 Not Sure Can Master Knowledge and Skills in Class I and II Class I and II Qualitative Analysis Lessons.

In Figure 8 related to not being sure of being able to master the knowledge and skills in class I and II qualitative analysis lessons, there was a significant decrease. Before the operational test, 38% of students chose scale 2. After the operational test, 52% of students chose scale 3. This was because students were distracted when using the learning media.

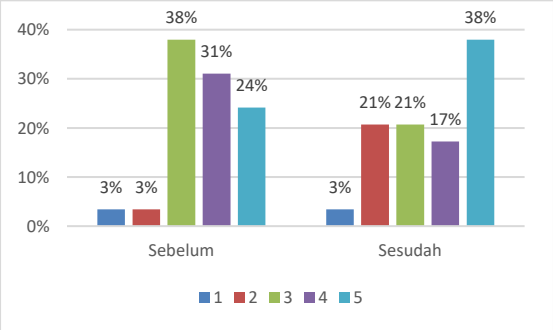

Figure 9 Always Ask If There Is Material You Don't Understand

In figure 9 related to always asking if there is material that you don't understand, there is an increase. Before the operational test, 38% of students chose scale 3. After the operational test, 38% of students chose scale 5. It can be seen from these results, social media that is used as a learning medium can increase student activity in learning.

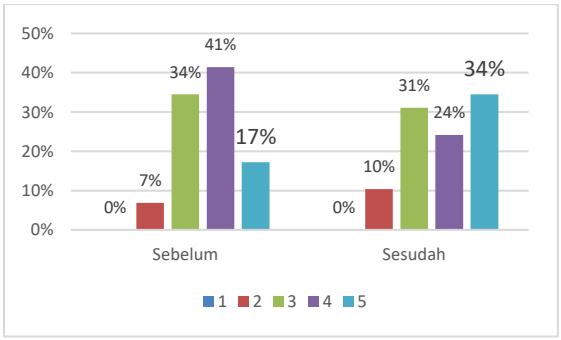

Figure 10 Confident Will Do Well in the Exam

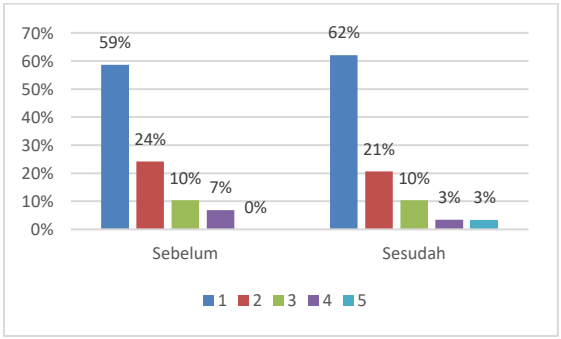

Figure 11 Never Improve Yourself If You Don't Succeed in the Exam

In Figure 10 related to sure that you will do well on the exam and Figure 11 about never improving yourself if you don't succeed in the exam, there is no significant change. Students in the class are sure that they will do well on the exam and can improve themselves if they do not succeed in the exam.

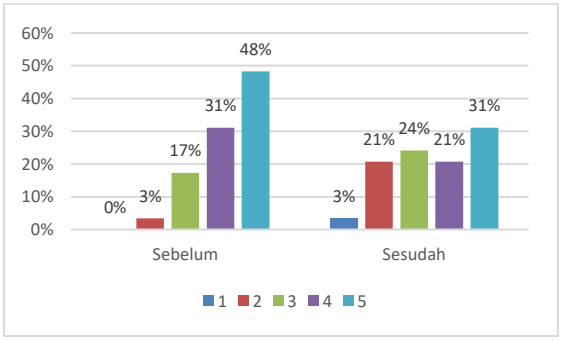

Figure 12 Always Happy When Successfully Learning And Understanding A Topic

In figure 12 related students are always happy when they succeed in learning and understanding a topic there is a decrease. Before the operational test, 48% of students chose a scale of 5 and 31% of students chose a scale of 4. After the operational test, 31% of students chose a scale of 5, 21% of students chose a scale of 4, 24% of students chose a scale of 3, and 21% of students chose a scale of 2.

Learning media integrated with social media does not affect the behavior of students who are always happy when they succeed in learning and understanding a topic.

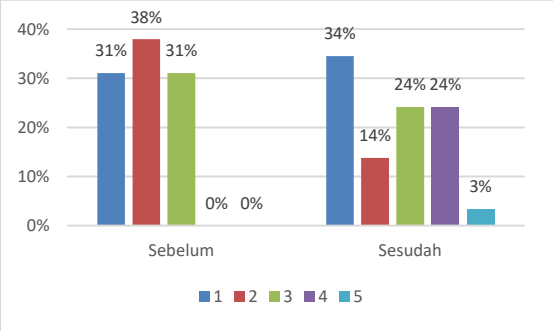

Figure 13 Qualitative Analysis of Groups I and II Cations Is Not Fun To Study

In Figure 13 regarding the qualitative analysis material for groups I and II are not pleasant to study, there is a decrease that is not too significant. Before the operational test, 31% of students chose scale 1, 38% of students chose scale 2, and 31% of students chose scale 3. After the operational test, 34% of students chose scale 1, 24% of students chose scale 3, and 24% of students chose scale 4. Students feel that qualitative analysis material for groups I and II are not fun to learn.

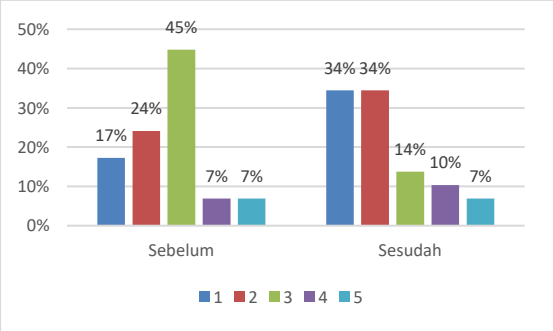

Figure 14 Qualitative Analysis Materials for Groups I and II Cations That Are Difficult Can't Be Learned Alone

In Figure 14 related to qualitative analysis material for groups I and II which are difficult to learn alone, there has been a significant increase. Before the operational test, 45% of students chose scale 3 and 24% of students chose scale 2. After the operational test, 34% of students chose scale 1 and 34% of students chose scale 2. It can be concluded that TikTok and Instagram integrated learning media can facilitate students in understand the learning material.

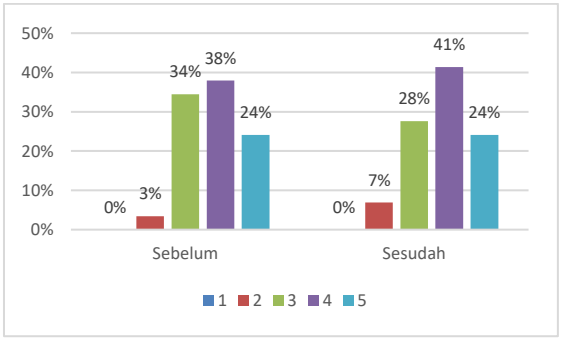

Figure 15 Happy To Observe Natural Events in Everyday Life

Figure 15 explains the results of a questionnaire regarding the behavior of students who enjoy observing natural events in everyday life. It can be seen that there was no significant change. Students in the class enjoy observing natural events in everyday life. This is in line with the results of the analysis in Figure 6, where the existence of integrated learning media, TikTok and Instagram, makes students think about the linkage of group I and II qualitative analysis with everyday life.

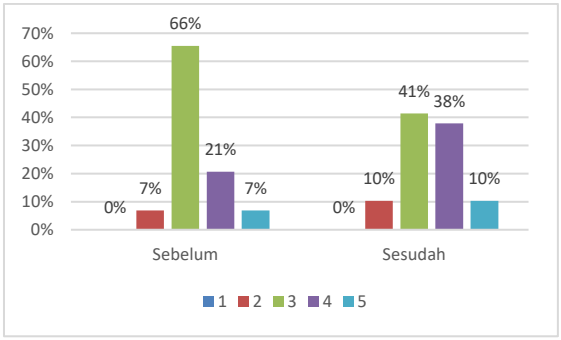

Figure 16 Material For Qualitative Analysis of Group I And II Cations Can Be Understood Easily

Figure 16 explains whether the material for qualitative analysis of group I and II cations can be easily understood. It can be seen that there was a not-so-significant increase. Before the test, 66% of students chose scale 3 and 21% of students chose scale 4. After the test, 41% of students chose scale 3 and 38% of students chose scale 4. It can be seen that the integrated learning media TikTok and Instagram can make it easier for students to understand learning materials.

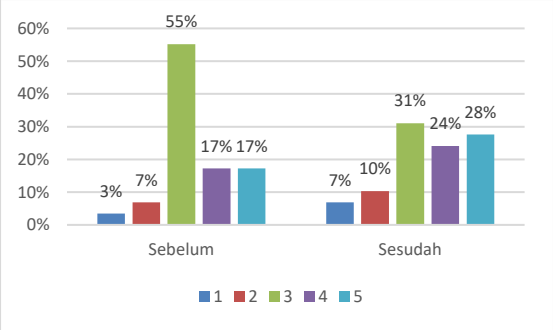

Figure 17 Material for Qualitative Analysis of Group I and II cations is interesting to study

Figure 17 explains whether the qualitative analysis material for group I and II cations is interesting to study. It can be seen that there was a not-so-significant increase. Before the operational test was dominated on a scale of 3 by 55% of students. After the operational test, 31% of students chose a scale of 3, 24% of students chose a scale of 4, and 28% of students chose a scale of 5. This shows that after using TikTok and Instagram integrated learning media students are more interested in learning qualitative analysis material. group I and II cations.

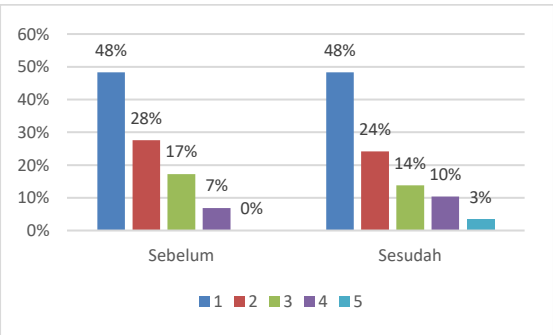

Figure 18 No Enthusiasm to Learn Qualitative Analysis of Group I and II Cations

Figure 18 describes the results of the questionnaire regarding the behavior of students who are not enthusiastic about studying the qualitative analysis of group I and II cations. It can be seen that there is no significant change. Students who use integrated learning media TikTok and Instagram are excited to learn qualitative analysis of group I and II cations.

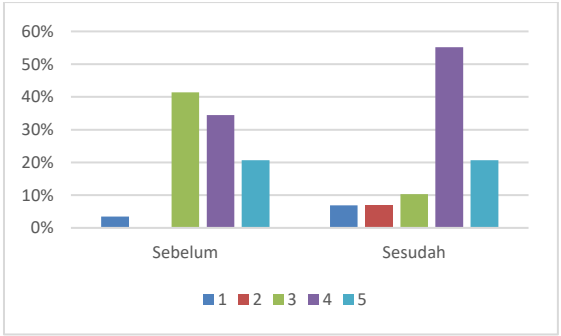

Figure 19 Happy to Learn Qualitative Analysis of Cations Groups I and II With the Help of Pictures and Videos

Figure 19 describes the results of the questionnaire regarding the behavior of students who enjoy studying qualitative analysis of group I and II cations with the help of pictures and videos. It can be seen that there is an increase after using TikTok and Instagram-based learning media. Before the operational test, 41% of students chose scale 3. After the operational test, 55% of students chose scale 4. It can be concluded that students enjoy learning qualitative analysis of class I and II cations with the help of pictures and videos using social media.

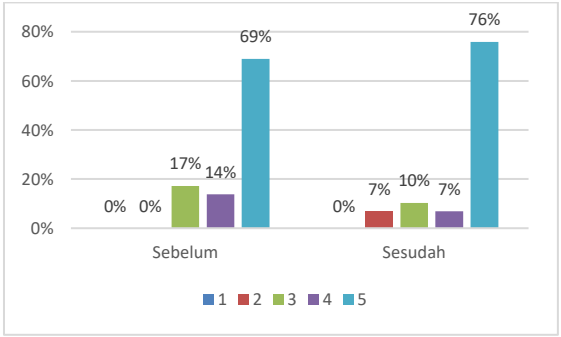

Figure 20 Desire to Get the Best Class I and Class II Qualitative Analysis Scores

Figure 20 explains the results of a questionnaire regarding the behavior of students who want to obtain the best group I and II qualitative analysis grades in the class. It can be seen that classes that use TikTok and Instagram integrated learning media have a stronger desire to get the best grades in class. This is because as many as 76% of students chose a scale of 5 after the operational test.

The results show that the integrated learning media of TikTok and Instagram in general can increase students' learning motivation. This can be seen from the behavior of students who are worried that other students

will have better achievements and want to get the best grades I and II qualitative analysis in the class.

Based on the results obtained, after learning using the learning media, students think more about the relationship between qualitative analysis of group I and II cations with everyday life. This is because students in classes who use integrated learning media TikTok and Instagram are more interested in studying qualitative analysis materials for groups I and II.

The existence of integrated learning media for TikTok and Instagram social media, allows students to study the material at home and feel no need to record the material because it can be watched repeatedly.

The disadvantage of using TikTok and Instagram social media as learning media is that in their use students can be distracted by other things when studying qualitative analysis material for groups I and II. This is in line with research conducted by Mekler (2021) on the correlation between time spent on TikTok and how it affects students to be distracted in class and their schoolwork. The study shows that the more time a student spends on TikTok, the more they will lose time and be distracted for their class [16].

CONCLUSIONS AND SUGGESTIONS

Based on the results of the research and discussion, it can be concluded that learning media integrated with social media TikTok and Instagram can increase student learning motivation in qualitative analysis material for groups I and II. Therefore, similar learning media can be developed for qualitative analysis material for group III, IV, and V cations, as well as other chemical material for further research.

REFERENCES

[1] Dick, W., Carey, L. and Carey, J. (2005). *The Systematic Design of Instruction*. Boston, MA; Pearson.

[2] Ariantini, K. P., Suwastini, N. K. A., Adnyani, N. L. P. S., Dantes, G. R., dan Jayantini, I. G. A. S. R. (2021). Integrating social media into English language learning: How and to what benefits according to recent studies. *NOBEL: Journal of Literature and Language Teaching*, 12(1): 91-111.

[3] Malik, A. R., dan Asnur, M. N. A. (2019). Using Social Media As A Learning Media Of Foreign Language Students In Higher Education. *Bahtera: Jurnal Pendidikan Bahasa Dan Sastra*, 18(2): 166-75.

[4] Asosiasi Penyelenggara Jasa Internet Indonesia. (2022). *Profil Internet Indonesia 2022*. Jakarta: Asosiasi Penyelenggara Jasa Internet Indonesia.

[5] Pujiono, A. (2021). Media Sosial Sebagai Media Pembelajaran Bagi Generasi Z. Didache: *Journal of Christian Education*, 2(1), 1. https://doi.org/10.46445/djce.v2i1.396

[6] Ramdani, N. S., Nugraha, H., & Hadiapurwa, A. (2021). Potensi Pemanfaatan Media Sosial Tiktok Sebagai Media Pembelajaran Dalam Pembelajaran Daring. *Akademika*, 10(02), 425–436. https://doi.org/10.34005/akademika.v10i02.1406

[7] Pujiati, H., & Tamela, E. (2019, August). The use of instagram to increase students' motivation and students' competence in learning English. In *1st International Conference on Education Social Sciences and Humanities (ICESSHum 2019)* (pp. 651-656). Atlantis Press.

[8] Purba, M. (2006). *Kimia Untuk SMA Kelas X*. Jakarta: Erlangga.

[9] Adnyana, G. P. (2012). Keterampilan Berpikir Kritis dan Pemahaman Konsep Siswa pada Model Siklus Belajar Hipotetis Deduktif. *Jurnal Pendidikan dan Pengajaran*. 45(3) : 201-209.

[10] Christian, G. D., Dasgupta, P. K., dan Schung, K. A. 2013. *Analytical Chemistry*. John Wiley dan Sons.

[11] Skoog, D. A., West, D. M., Holler, F. J., dan Crouch, S. R. 2013. *Fundamentals of Analytical Chemistry*. Boston: Cengage Learning.

[12] Kurniasih, D., dan Rahayu, H. M. (2017). Pengembangan Perangkat Pembelajaran Kimia Analitik Materi Kromatografi Berorientasi Inkuiri Terbimbing. *Jurnal Pendidikan Matematika Dan IPA*, 8(2), 31.

https://doi.org/10.26418/jpmipa.v8i2.21173

[13] R. Fathonah, M. Masykuri, and S. Saputro, "Pengembangan Multimedia Simulatif Kimia Berbasis Inkuiri Terbimbing pada Materi Analisis Kualitatif Kation Golongan 1," *Jurnal Inkuiri*, vol. 4, no. 3, pp. 2252-7893, 2015.

https://doi.org/10.20961/inkuiri.v8i2.31822

[14] Widarti, H. R., Rokhim, D. A., dan Muchson, M. (2021). Developing Integrated Triplet Multi-Representation Virtual Laboratory in Analytic Chemical Materials. International *Journal of Interactive Mobile Technologies*, 15(8): 119-134.

[15] Langitasari, I. (2016). Analisis Kemampuan Awal Multi Level Representasi Mahasiswa Tingkat I pada Konsep Reaksi Redoks. *EduChemia (Jurnal Kimia dan Pendidikan)*, 1(1): 14-24.

[16] Mekler, A. (2021). The Effects of TikTok Use on College Student Learning. *Undergraduate Review*, 16, 19. https://vc.bridgew.edu/undergrad_rev/vol16/iss1/19