

**ANALYSIS OF THE GAP IN THE USE OF MICROSOFT TEAMS AS AN ONLINE LEARNING TOOL TOWARD STUDENTS' MOTIVATION IN MATHEMATICS**

**Witha Paramitha<sup>1\*</sup>, Arief Agoestanto<sup>2</sup>**

<sup>1,2</sup>Universitas Negeri Semarang, Sekaran, Kec. Gn. Pati, Kota Semarang 50229, Jawa Tengah, Indonesia  
E-mail: withaparamitha1710@students.unnes.ac.id

**ARTICLE INFO**

**Article history**

Received: 2023-10-05

Revised: 2023-12-16

Accepted: 2024-01-20

**Keywords**

Problems, Microsoft Teams, Online Learning, Learning Motivation.

**ABSTRACT**

Penelitian ini bertujuan untuk menganalisis problematika penggunaan *Microsoft Teams* sebagai sarana pembelajaran daring terhadap motivasi belajar matematika siswa. Metode yang digunakan dalam penelitian ini adalah metode deskriptif kualitatif. Data dari penelitian ini didapat dengan cara menyebarkan kuesioner kepada 50 siswa SMP Negeri 2 Semarang dan wawancara terstruktur kepada kepala sekolah SMP Negeri 2 Semarang, guru matematika, dan 50 orang siswa. Hasil penelitian ini menunjukkan problematika penggunaan *Microsoft Teams* sebagai sarana pembelajaran daring terhadap motivasi belajar matematika siswa seperti problematika minat belajar siswa, problematika kemampuan siswa, problematika kondisi siswa, problematika lingkungan keluarga, problematika lingkungan tempat belajar, problematika fasilitas yang menunjang dalam belajar, dan problematika lingkungan sekolah. Upaya yang dilakukan dalam menghadapi problematika tersebut di antaranya memberikan pelatihan penggunaan *Microsoft Teams* kepada guru, memberikan bantuan *smartphone* bagi siswa yang membutuhkan, memberikan motivasi kepada siswa dengan mengundang berbagai motivator, serta kolaborasi antara guru dengan orang tua siswa.

*The purpose of this study is to analyze the problem of using Microsoft Teams as an online learning tool on student's mathematics learning motivation. The method used in this study is qualitative descriptive. Data was collected from a questionnaire of 50 students of Junior High School 2 Semarang and the structured interview with the headmaster of Junior High School 2 Semarang, a mathematics teacher, and 50 students of Junior High School 2 Semarang. The results of this study showed that the problems of using Microsoft Teams as an online learning tool on student's motivation to learn mathematics such as problems of student interest in learning, problems of student abilities, problems of student conditions, problems of the family environment, problems of the learning environment, problems of facilities that support learning, and problems of the school environment. Efforts made to deal with these problems include providing training to teachers on the use of Microsoft Teams, providing smartphones for students who need them, motivating students by inviting various motivators, and collaborating between teachers and parents.*

**How to Cite:**

Paramitha, W. & Agoestanto, A. (2024). Analysis of The Gap in The Use of Microsoft Teams as an Online Learning Tool Towards Students' Motivation in Mathematics. *Journal of Authentic Research on Mathematics Education*, 6(1), 55-65. <https://doi.org/10.37058/jarme.v6i1.9437>

---

**1. INTRODUCTION**

The Industrial Revolution 4.0 has entered the world, marked by the development of connectivity and digital system networks, artificial intelligence, and virtual technology. The boundaries between humans, machines, and information and communication technology are increasingly converging, impacting all areas of life, including the education system in Indonesia. Education becomes essential for achieving harmony and perfection in an individual's life development (Blossfeld & von Maurice, 2019; Hendricks, 1961; Nurkholis, 2013).

In the era of Industrial Revolution 4.0, education is often referred to as Education 4.0, where digital technology is integrated into the learning process both physically and non-physically (Mourtzis et al., 2018; Sabri, 2020). According to Lase (2019), in the 4.0 era, technology and humans merge to create new opportunities creatively and innovatively, making education a response to the needs of the industrial revolution in this era. The utilization of technology enables the learning process to occur without being limited by space and time.

At the end of 2019, the world was hit by the Covid-19 pandemic. Covid-19, also known as coronavirus, is a type of coronavirus that spreads to humans. In early 2020, the coronavirus entered Indonesia, prompting the government to issue a circular on work system adjustments and implement a work-from-home policy. This policy also affected the education system in Indonesia, with the government enforcing online learning. According to Permendikbud No. 109/2013, online learning is a learning process using technologies such as computers, laptops, and smartphones. Although students are at home, online teaching and learning activities must be ensured by teachers to proceed effectively. Teachers need creative and innovative thinking skills to collaborate with students during the online learning process (Lase et al., 2021).

In online learning, several tools can be used by teachers to deliver learning information to students, one of which is Microsoft Teams. According to Ilag (2018), Microsoft Teams is an application that can unify phone calls, conversations, meetings, content archives, and applications together in one place. In Microsoft Teams, teachers and students can communicate through conversations and live meetings. The assignment feature can be used by teachers to monitor the progress of tasks given to students. Teachers can more easily communicate with students, share files and websites, and assess the assignments completed by students (Office 365 Team, 2020).

The use of Microsoft Teams as an online learning tool is expected to improve the quality and effectiveness of classroom learning. However, the use of Microsoft Teams may also pose several challenges in the learning process. Challenges such as operating

Microsoft Teams, signal stability, and internet quota availability will undoubtedly affect the learning process, especially students' learning motivation. Schunk (2014) states that motivation is an important factor within students that influences all their learning activities. Motivated students will be enthusiastic about participating in online learning, aware of the importance of learning, and will find it easier to complete assignments (Cabansag, 2020).

According to Dimiyati & Mudjiono (2013), factors influencing students' learning motivation include aspirations/ideals, students' abilities, students' conditions, students' environmental conditions, and dynamic elements in teaching and learning. In online learning through Microsoft Teams, students who meet these factors will have good learning motivation. Conversely, students with low learning motivation will face barriers in receiving learning information, impacting their learning outcomes and making it difficult to achieve learning objectives.

Research conducted by Nurfallah & Pradipta (2021) concluded that students' learning motivation falls into the moderate category during online learning. This is evident from the percentage values of each category, where 13% of students have high mathematics learning motivation, 70% have moderate mathematics learning motivation, and 17% have low mathematics learning motivation. However, this study only revealed the factors influencing students' learning motivation during online learning without detailing the necessary efforts to address the existing problems.

Based on the above identification results, the focus of this research can be formulated as follows: 1) What are the issues of using Microsoft Teams as an online learning tool on students' mathematics learning motivation? 2) What efforts can be made to address the issues of using Microsoft Teams as an online learning tool on students' mathematics learning motivation?

## 2. METHODS

This study employs a qualitative method with a descriptive qualitative approach. This research aims to describe and examine the actual conditions related to the issues of using Microsoft Teams as an online learning platform and its impact on students' motivation to learn mathematics. The research was conducted at SMP Negeri 2 Semarang, with the subjects including the principal, mathematics teachers, and 50 students of SMP Negeri 2 Semarang.

Data for this study were collected through questionnaires and structured interviews. According to Gillham (2008), a questionnaire is an effective way to gather information from several respondents to answer research questions. In this study, the questionnaire consisted of 20 statements related to the issues of using Microsoft Teams as an online learning platform and its impact on student's motivation to learn mathematics. Data from the 50 students were collected using Google Forms.

Additionally, structured interviews were used as a data collection technique. Sugiono (2017) defines an interview as a question-and-answer activity between two people to provide insights into information and ideas in constructing meaning on a

particular topic. This includes structured, semi-structured, and unstructured interviews. In this study, structured interviews were conducted with the principal, mathematics teachers, and 50 students to deepen the information obtained from the questionnaires.

The data analysis techniques used in this research include data reduction, data display, and conclusion drawing/verification. Data validity was tested using source triangulation. Sugiono (2017) describes source triangulation as a method for testing the credibility of data by obtaining data from different sources but using the same data collection technique.

### 3. RESULTS AND DISCUSSION

#### 3.1. Results

The following presents the results of the questionnaire consisting of 20 statements distributed to 50 students.

**Table 1.** Results of the Questionnaire from 50 Students

No	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Something was interesting for me when I conducted online learning for the first time.	2%	0%	8%	72%	18%
2	The first time I conducted online learning, I believed it would be easy for me.	2%	6%	34%	38%	20%
3	I was very happy with learning mathematics through the Microsoft Teams application, so I wanted to learn more about the mathematics subject matter.	4%	6%	22%	60%	8%
4	The mathematics learning material delivered through Microsoft Teams attracted my attention.	2%	4%	22%	66%	6%
5	The content of the mathematics learning material delivered through Microsoft Teams matched my interests.	2%	14%	30%	50%	4%
6	I found it difficult to understand the mathematics learning material delivered through Microsoft Teams.	6%	12%	24%	44%	14%
7	The assignments given through Microsoft Teams were too difficult for me.	8%	34%	34%	14%	10%
8	I felt tired and often sleepy when participating in mathematics learning through Microsoft Teams.	6%	34%	24%	22%	14%
9	The content of the mathematics learning material delivered	2%	0%	8%	60%	30%

	through Microsoft Teams will be beneficial for me.					
10	I agree with using the Microsoft Teams application in the current mathematics learning process.	2%	6%	12%	58%	22%
11	My parents monitor the mathematics learning process through Microsoft Teams.	4%	14%	12%	56%	14%
12	If I have difficulty completing tasks, my parents always help me.	2%	16%	16%	48%	18%
13	My learning environment is not conducive, making it difficult for me to focus on studying.	10%	54%	16%	10%	10%
14	The study space at home is very comfortable, making me feel at ease when studying through Microsoft Teams.	4%	10%	26%	46%	14%
15	The smartphone is a hindrance to me during the mathematics learning process through Microsoft Teams.	8%	60%	12%	18%	2%
16	Internet quota is a hindrance to me during the mathematics learning process through Microsoft Teams.	12%	56%	6%	20%	6%
17	The signal is a hindrance to me during the mathematics learning process through Microsoft Teams.	4%	16%	20%	30%	30%
18	The way the teacher delivers the mathematics learning material through Microsoft Teams is very enjoyable.	0%	0%	24%	64%	12%
19	The mathematics teacher always monitors me during the mathematics learning process through Microsoft Teams.	0%	0%	14%	60%	26%
20	The mathematics teacher responds well to questions asked by students during the learning process through Microsoft Teams.	0%	0%	4%	52%	44%

### 3.2. Discussion

#### *Analysis of Questionnaire*

Based on the table above, student responses to each statement item can be outlined as follows.

*First*, problems with students' learning interests. The shift from face-to-face learning to online learning through Microsoft Teams has led to a decrease in interest in learning among some students (Laili et al., 2022). Learning motivation tends to increase if students have a high interest in learning (Andriani & Sojanah, 2017; Mustami & Safitri, 2018; Weber, 2003). For statement number 1, "Something is interesting for me when I first engaged in online learning," 8% of students were unsure and 2% strongly disagreed. Meanwhile, for statement number 2, "When I first engaged

in online learning, I believed it would be easy for me," 34% of students were unsure about the ease of online learning, due to a lack of understanding without direct examples. For statement number 5, "The content of mathematics learning delivered through Microsoft Teams matches my interest," 30% of students were unsure and 14% disagreed. Students felt bored because teachers only presented material through PowerPoint. Rahmawati et al. (2021) stated that students' interest in online learning is low, indicated by difficulties in concentrating and boredom. For example, in the Cartesian coordinate system material, students struggled to understand the concept through Microsoft Teams using only PowerPoint. The lack of variety in mathematics learning indirectly caused students to lose interest, impacting their learning motivation.

*Second*, problems with students' abilities. Students' abilities significantly affect their assignment scores, learning goals, and achievements (Steinmayr et al., 2019). Students with high intelligence can easily solve tasks or problems, and this ability also affects their learning motivation (Anditiasari et al., 2021). For statement number 6, "I find it difficult to understand mathematics lessons delivered through Microsoft Teams," 44% of students agreed. For statement number 7, "Assignments given through Microsoft Teams are too difficult for me," 14% of students agreed. Students with lower abilities tend to struggle to understand concepts and materials delivered by teachers through Microsoft Teams, particularly due to limited time and the broad scope of the material. For example, in the exponentiation material, many students made mistakes in solving given problems, affecting their learning outcomes.

*Third*, problems with students' conditions. Several physical obstacles faced by students in online learning include tired eyes, headaches, difficulty resting, and other physical complaints (Octaberlina & Muslimin, 2020). For statement number 8, "I feel tired and often sleepy when participating in mathematics lessons through Microsoft Teams," 22% of students agreed and 14% strongly agreed. This is due to excessive use of electronic devices, causing eye strain and sleepiness. Moreover, online learning is considered monotonous, leading to fatigue and a lack of enthusiasm for learning activities (Prawanti & Sumarni, 2020).

*Fourth*, family environment issues. The support of the family environment is crucial in shaping students' personalities. Parents play a crucial role in supporting students' learning at home, although not all can do so due to other commitments such as work. This lack of support can affect students' readiness for online learning (Lazarides et al., 2015). Statement number 11 indicates that 14% of students disagree that their parents monitor their mathematics learning through Microsoft Teams. Additionally, in statement number 12, 16% of students are hesitant or disagree that their parents always help them when they have difficulty with online learning tasks, with 2% strongly disagreeing for the same reasons.

*Fifth*, learning environment factors. Variations in students' learning environments can significantly influence motivation and the quality of learning. Statement number 13 shows that 10% of students agree that their learning

environment is not conducive, while another 10% strongly agree, mainly due to noise and disturbances from siblings (Meşe & Sevilen, 2021).

*Sixth, the availability of supporting facilities.* Factors such as the availability of smartphones, internet quotas, and signal stability have a significant impact on the implementation of online learning through Microsoft Teams (Fitrian & Dewi, 2021). Statement number 15 indicates that 18% of students agree that their smartphones hinder their mathematics learning process on the platform, with an additional 2% strongly agreeing. This situation is often experienced by students from lower-middle-class backgrounds who have to share devices with siblings or use their parents' devices. Additionally, 20% of students consider internet quotas a hindrance (statement number 16), while 30% feel that signal issues disrupt the learning process (statement number 17), all of which can affect comfort and communication efficiency with teachers (Liu et al., 2019; Moawad, 2020).

*Seventh, School Environment Challenges.* During online learning through Microsoft Teams, challenges in the school environment include limited direct interaction between teachers and students. Teachers are restricted to monitoring and directing students online, which can affect student participation in learning (Gatlin, 2018).

### ***Efforts in Addressing Issues of Using Microsoft Teams to Build Student Learning Motivation***

Various efforts have been made by the school principal, mathematics subject teachers, and students to address the challenges of using Microsoft Teams as a platform for online learning. The success of implementing Microsoft Teams in online learning owes much to the principal's role as the primary driver of activities within the school (Mevlevi et al., 2021). At the onset of using Microsoft Teams for online learning, the principal invited central Microsoft Teams facilitators to conduct orientation sessions for teachers at the school regarding the platform's operation. This was done to strengthen teachers' understanding of the process of conducting online learning through Microsoft Teams.

Students who do not have personal smartphones are encouraged to report to the school so that the school can coordinate with other parent associations to assist these students. Additionally, the principal also organizes activities to boost students' learning motivation by providing a two-day break from regular classes. On these days, motivational activities are conducted live on YouTube, featuring various speakers, including successful alumni. It is hoped that these activities will inspire and motivate students to remain enthusiastic and achieve success in online learning.



**Figure 1.** Talk show with outstanding alumni at SMP Negeri 2 Semarang

In the context of online learning through Microsoft Teams, the role of teachers as educators is crucial in guiding and optimizing students' potential to achieve learning objectives (Caena & Redecker, 2019). According to Herlambang (2018), teachers are not only facilitators but also leaders and motivators for students in the learning process. Mathematics teachers actively monitor students' progress in understanding the material through this platform. If students encounter difficulties in understanding the lessons, teachers provide additional time outside regular class hours, such as in the afternoon or on weekends. Additionally, teachers create instructional videos uploaded to YouTube to facilitate students in accessing reviewed materials.

Teachers also play a role in motivating students by providing words of encouragement before starting lessons, presenting motivational videos, and giving additional recognition to students who actively participate in class, whether by asking questions, answering them, or submitting assignments on time. Communication between teachers and students' parents is maintained through WhatsApp groups to inform them of students' learning progress during the online learning process. Information on students' learning outcomes is also conveyed to parents through semester reports or daily assessments.

In addition to the roles of teachers and school principals, students are also actively involved in addressing challenges in this online learning environment. They employ various strategies when facing difficulties in understanding the material, such as reviewing PowerPoint presentations shared by teachers via Microsoft Teams, seeking additional resources on Google and YouTube, and discussing with peers to help each other understand challenging topics. These steps greatly contribute to enhancing students' understanding of difficult subjects.



#### 4. CONCLUSION

The shift from face-to-face learning to online learning has required both teachers and students to adapt to various educational technologies. Microsoft Teams, as a new learning platform, has posed challenges that can impact student motivation. These challenges include issues related to interest in learning, students' capabilities, individual student conditions, learning environments, supportive facilities, and school environments. To address these challenges, school principals, mathematics teachers, and students have made various efforts. Mathematics teachers have been trained to better understand the use of Microsoft Teams, smartphones have been provided to students in need, student motivation has been enhanced through invitations to motivational speakers, extra hours have been scheduled outside of regular class times, and collaboration with parents has been established to monitor students' progress in online learning through Microsoft Teams.

#### REFERENCES

- Anditiasari, N., Pujiastuti, E., & Susilo, B. E. (2021). Systematic literature review : pengaruh motivasi terhadap kemampuan berpikir kreatif matematis siswa. *Aksioma: Jurnal Matematika Dan Pendidikan Matematika*, 12(2), 236–248.
- Andriani, D., & Sojanah, J. (2017). Upaya Meningkatkan Kompetensi Siswa Melalui Motivasi Belajar. *Jurnal Pendidikan Manajemen Perkantoran*, 2(1), 242. <https://doi.org/10.17509/jpm.v2i1.14604>
- Blossfeld, H.-P., & von Maurice, J. (2019). *Education as a Lifelong Process*. [https://doi.org/10.1007/978-3-658-23162-0\\_2](https://doi.org/10.1007/978-3-658-23162-0_2)
- Cabansag, P., Cabansag, V., & Soriano, R. (2020). Students' Motivation toward Online Learning: Basis for Policy Making. *The ASTR Research Journal*, 4(1), 81-103. <https://www.ejournals.ph/article.php?id=16463>
- Caena, F., & Redecker, C. (2019). Aligning teacher competence frameworks to 21st-century challenges: The case for the European Digital Competence Framework for Educators (Digcompedu). *European Journal of Education*, 54(3), 356–369. <https://doi.org/10.1111/ejed.12345>
- Dimiyati & Mudjiono (2013). *Belajar Dan Pembelajaran*. Jakarta: Rineka Cipta
- Fitrian, R., & Dewi, R. (2021). Ragam Tingkat Kemampuan Berpikir Kreatif Siswa dalam Pembelajaran Matematika Daring. In *Menjadi Guru Profesional dan Inovatif dalam Menghadapi Pandemi (Antologi Esai Mahasiswa Pendidikan Matematika)*.
- Gillham, B. (2008). *Developing a questionnaire*. A&C Black
- Hendricks, C. B. (1961). The Process of Education (Bruner, Jerome). *Journal of Chemical Education*. <https://doi.org/10.1021/ed038pa276.2>
- Herlambang, Y. T. (2018). *Pedagogik: Telaah Kritis Ilmu Pendidikan dalam Multiperspektif*. Jakarta: Bumi Aksara.
- Ilag, B. N. (2018). Introduction: Microsoft Teams. In *Introducing Microsoft Teams*. [https://doi.org/10.1007/978-1-4842-3567-6\\_1](https://doi.org/10.1007/978-1-4842-3567-6_1)

- Laili, A. N., Akmalia, D. A., Silmi, E. N., Ummah, S. N., Nayyiroh, Z., & Fauzi, I. (2022). Analisis Problematika Pendidik dalam Pembelajaran Daring pada Mata Pelajaran Matematika di Sekolah Menengah Pertama. *Cetta: Jurnal Ilmu Pendidikan*, 5(3), 317–328. <https://doi.org/10.37329/cetta.v5i3.1737>
- Lase, D. (2019). Pendidikan di Era Revolusi Industri 4.0. *SUNDERMANN: Jurnal Ilmiah Teologi, Pendidikan, Sains, Humaniora dan Kebudayaan*, 1(1), 28-43. <https://www.jurnal.sttsundermann.ac.id/index.php/sundermann/article/view/18>
- Lase, D., Daeli, D. O., Ndraha, A., & Harefa, J. (2021). Skills and Competencies of Christian Religious Education Teachers in the Industrial Revolution 4.0 Era. *SSRN Electronic Journal*, 1, 4–9. <https://doi.org/10.2139/ssrn.3904632>
- Lazarides, R., Harackiewicz, J., Canning, E., Pesu, L., & Viljaranta, J. (2015). The role of parents in students' motivational beliefs and values. In *The Routledge International Handbook of Social Psychology of the Classroom*. <https://doi.org/10.4324/9781315716923>
- Liu, S., Li, Z., Zhang, Y., & Cheng, X. (2019). *Introduction of Key Problems in Long-Distance Learning and Training*. October 2018, 1–4.
- Meşe, E., & Sevilen, Ç. (2021). Factors influencing EFL students' motivation in online learning: A qualitative case study. *Journal of Educational Technology & Online Learning*, 4(1), 11–22. <http://dergipark.org.tr/jetol>Doi:<http://doi.org/10.31681/jetol.817680>
- Mevlevi, M. T., Prihartini, P., & Kuswanto, K. (2021). Pengaruh Kepala Sekolah dalam Pengelolaan Pendidikan di Sekolah Dasar. *SAP (Susunan Artikel Pendidikan)*, 5(3). <https://doi.org/10.30998/sap.v5i3.8425>
- Moawad, R. A. (2020). Online Learning during the COVID-19 Pandemic and Academic Stress in University Students. *Revista Romaneasca Pentru Educatie Multidimensionala*. <https://doi.org/10.18662/rrem/12.1sup2/252>
- Mourtzis, D., Vlachou, E., Dimitrakopoulos, G., & Zogopoulos, V. (2018). Cyber-Physical Systems and Education 4.0 -The Teaching Factory 4.0 Concept. *Procedia Manufacturing*, 23(2017), 129–134. <https://doi.org/10.1016/j.promfg.2018.04.005>
- Mustami, M. K., & Safitri, D. (2018). The effects of numbered heads together-Assurance Relevance Interest Assessment Satisfaction on students' motivation. *International Journal of Instruction*, 11(3), 123–134. <https://doi.org/10.12973/iji.2018.1139a>
- Nurfallah, M., & Pradipta, T. R. (2021). Motivasi Belajar Matematika Siswa Sekolah Menengah Selama Pembelajaran Daring di Masa Pandemi COVID-19. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 5(3), 2425–2437. <https://doi.org/10.31004/cendekia.v5i3.752>
- Nurkholis. (2013). *PENDIDIKAN DALAM UPAYA MEMAJUKAN TEKNOLOGI Oleh: Nurkholis Doktor Ilmu Pendidikan, Alumnus Universitas Negeri Jakarta Dosen Luar Biasa Jurusan Tarbiyah STAIN Purwokerto*. 1(1), 24–44.
- Octoberlina, L. R., & Muslimin, A. I. (2020). EFL student's perspective towards online

- learning barriers and alternatives using Moodle/Google Classroom during the COVID-19 pandemic. *International Journal of Higher Education*, 9(6), 1–9. <https://doi.org/10.5430/ijhe.v9n6p1>
- Peraturan Menteri Pendidikan dan Kebudayaan Republik Indonesia Nomor 109 Tahun 2013 Tentang Penyelenggaraan Pendidikan Jarak Jauh Pada Pendidikan Tinggi
- Prawanti, L. T., & Sumarni, W. (2020). Kendala Pembelajaran Daring Selama Pandemic Covid-19. *Prosiding Seminar Nasional Pascasarjana UNNES*, 286–291.
- Rahmawati, F. F., Setiawan, D., & Roysa, M. (2021). Penyebab Kesulitan Belajar Siswa pada Pembelajaran Daring. *Journal for Lesson and Learning Studies*, 4(3), 302–308. <https://doi.org/10.23887/jlls.v4i3.32506>
- Sabri, A. (2020). *Pendidikan Islam Menyongsong Era Industri 4.0*. Deepublish
- Schunk, D.H., Pintrich, P.R., & Meece, J.L. (2008). *Motivasi Dalam Pendidikan*. Edisi 3. Terjemahan Ellys Tjo. 2012. Jakarta: PT Indeks
- Steinmayr, R., Weidinger, A. F., Schwinger, M., & Spinath, B. (2019). The importance of students' motivation for their academic achievement-replicating and extending previous findings. *Frontiers in Psychology*, 10(JULY). <https://doi.org/10.3389/fpsyg.2019.01730>
- Sugiono. (2017). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.
- Tim Office 365. (2020). *Menggunakan Microsoft Teams untuk Kelas Online (Remote Learning)* <https://365.telkomuniversity.ac.id/menggunakan-microsoft-teams-untuk-kelasonline-remote-learning>
- Weber, K. (2003). The relationship of interest to internal and external motivation. *Communication Research Reports*. <https://doi.org/10.1080/08824090309388837>