

The Influence of the Flipped Classroom with Google Sites on Circulatory System Material to Motivation and Student Learning Outcomes

Raudhatul Haningrum¹, Syamsul^{1*}, Andi Maulana¹, Syahriani¹, Ahmad Ali¹

¹Pendidikan Biologi, Fakultas Tarbiyah dan Keguruan, Universitas Islam Negeri Alauddin Makassar, Indonesia

*Correspondence email: syamsul.hamzah@uin-alauddin.ac.id

ABSTRAK

Penelitian ini dilatarbelakangi oleh usaha untuk meningkatkan penggunaan model dan media pembelajaran berbasis teknologi terhadap motivasi dan hasil belajar. Model dan media pembelajaran yang dapat meningkatkan motivasi dan hasil belajar yaitu model pembelajaran flipped classroom dengan google sites. Tujuan penelitian ini untuk mengetahui pengaruh model pembelajaran flipped classroom dengan google sites pada materi sistem peredaran darah terhadap motivasi dan hasil belajar. Penelitian ini merupakan penelitian quasi eksperimen dengan desain penelitian nonequivalent control group design. Populasi penelitian adalah kelas XI MIPA SMAN 6 Jeneponto. Teknik pengambilan sampel yang digunakan adalah purposive sampling yaitu kelas XI MIPA 2 sebagai kelas eksperimen dan XI MIPA 5 sebagai kelas kontrol. Teknik analisis data yang digunakan adalah analisis statistik deskriptif dan analisis statistik inferensial dengan uji-t dengan bantuan SPSS 23. Berdasarkan hasil analisis menggunakan uji-t untuk motivasi belajar memiliki nilai sig ($0.000 < 0.05$) dan untuk hasil belajar memiliki nilai sig ($0.000 < 0.05$). Dimana jika nilai Sig < 0.05 Sehingga H_0 ditolak dan H_1 diterima, dengan demikian terdapat pengaruh model pembelajaran flipped classroom dengan google sites terhadap motivasi dan hasil belajar pada peserta didik kelas XI MIPA SMAN 6 Jeneponto.

ABSTRACT

This study was motivated by the need to optimize the use of technology-enhanced instructional models and media to improve students' learning motivation and academic achievement. One instructional approach considered potentially effective in this regard is the flipped classroom model supported by Google Sites. This study aimed to examine the effect of the flipped classroom model integrated with Google Sites on students' motivation and learning outcomes in the topic of the circulatory system. The study employed a quasi-experimental method with a nonequivalent control group design. The population consisted of Grade XI Science students at Public Senior High School 6 Jeneponto. Purposive sampling was used to select Grade XI Mathematics and Natural Sciences 2 as the experimental group and Grade XI Mathematics and Natural Sciences 5 as the control group. Data were analyzed using descriptive statistics and inferential statistics through an independent samples t-test with the assistance of SPSS version 23. The results of the t-test showed a statistically significant effect on learning motivation ($p < 0.001$) and learning outcomes ($p < 0.001$). Since the significance values were below 0.05, the null hypothesis (H_0) was rejected, and the alternative hypothesis (H_1) was accepted. These findings indicate that the flipped classroom model supported by Google Sites significantly affected the learning motivation and academic achievement of Grade XI Science students at Public Senior High School 6 Jeneponto.

ARTICLE HISTORY

Received 27 October 2025

Accepted 4 October 2026

KEYWORDS

flipped classroom; learning motivation; learning outcomes

HOW TO CITE:

Haningrum, R., et al. (2026). The Influence of the Flipped Classroom with Google Sites on Circulatory System Material to Motivation and Student Learning Outcomes. *Jurnal Al-Ahya*, 8(2), 86–97. <https://doi.org/10.24252/al-ahya.v7i2>

Introduction

The advancement of a civilization largely depends on the quality of its human resources. Developing high-quality human resources requires adequate educational facilities and infrastructure. Education plays a crucial role in societal development and must continuously evolve in response to changing times and emerging demands. Accordingly, the government places education among its primary priorities as a strategic effort to advance national development. The inadequate realization of educational provision within society may consequently lead to a low quality of human resources (Fauzan et al., 2021).

One of the functions of education in Indonesia is to develop knowledge and improve the quality of human resources. One strategy for achieving high educational standards is the implementation of varied learning models that facilitate information processing. Information-processing models emphasize the development of students' thinking skills, active participation, and enjoyment during learning. When students experience positive emotions and engagement during the learning process, they are more likely to absorb and understand instructional content effectively (Trianto, 2007).

Learning is a planned interaction between teachers and students designed to stimulate learning and develop students' potential. Through interaction with their environment, students acquire information in the domains of knowledge, skills, and attitudes. However, various problems are frequently encountered during the learning process, including inadequate facilities and infrastructure as well as limitations in the quality and quantity of teachers capable of implementing effective instruction. A learning process can be considered effective when students' learning outcomes are aligned with the intended learning objectives (Purwati & Alifi, 2018).

Teacher-centered learning remains one of the major factors that can make the learning process monotonous and less engaging, thereby reducing students' motivation and preventing learning objectives from being achieved optimally (Sarpparaje et al., 2018). Therefore, learning models should be selected and implemented efficiently and in a sufficiently varied manner to enhance students' motivation and learning outcomes. The use of the flipped classroom model supported by Google Sites represents an approach that is relevant to the 2013 Curriculum because it emphasizes active student participation and positions the teacher as a facilitator. This approach provides students with greater opportunities to explore information independently and deepen their understanding of the subject matter (Rusnawati, 2020).

The flipped classroom is a learning approach that reverses the traditional instructional pattern in which the teacher serves as the primary source of learning in a teacher-centered approach and shifts the focus toward a student-centered approach. In this model, students are provided with learning materials in advance so that they can study them at home. Classroom time can then be used

to reinforce students' understanding through assignments, discussions, and further exploration of topics or problems that have not yet been fully mastered (Ulya et al., 2019). The characteristics of the flipped classroom extend beyond simply reversing the conventional learning sequence. The acronym "FLIP" represents four essential elements: F (*Flexible Environment*), referring to flexibility and the effective use of technology; L (*Learning Culture*), referring to a learner-centered culture; I (*Intentional Content*), referring to deliberately selected learning content; and P (*Professional Educator*), referring to the role of professional educators in facilitating learning (Sams, 2014).

The flipped classroom model reflects the integration of three major components, namely *Technological Knowledge* (TK), *Pedagogical Knowledge* (PK), and *Content Knowledge* (CK), which together form the *Technological Pedagogical Content Knowledge* (TPACK) framework. This framework emphasizes the importance of teachers' ability to select and utilize technology effectively to support appropriate instructional strategies (Jdaitawi, 2019). As a form of digital learning pedagogy, the flipped classroom model is frequently integrated with Google Sites to facilitate learning because it offers flexible access and enables the presentation of relevant and up-to-date learning content (Zain & Parah, 2019).

Google Sites is a web-based platform developed by Google that allows users to create and manage websites. It can be used as an instructional medium in combination with the flipped classroom model because it is relatively easy to develop and manage, even for users with limited technical expertise. The platform is free to use and can be accessed through laptops, computers, and smartphones connected to the internet [9]. The integration of technology into learning is expected to create educational and entertainment elements to enhance students' learning experiences (Arnata et al., 2020).

The implementation of the flipped classroom model through Google Sites is expected to address the demands of contemporary educational development by enabling students to use classroom time more efficiently, providing greater learning opportunities, and increasing interaction among learners. This model also encourages students to participate actively in the learning process and may contribute to improved conceptual understanding and more optimal learning outcomes. Such advantages arise because students are required to actively process the information provided by the teacher and become directly involved in learning activities (Rusnawati, 2020).

Methodology

This study employed a quasi-experimental method using a nonequivalent control group design. The population comprised all Grade XI Mathematics and Natural Sciences students at Public Senior High School 6 Jenepono. The sample was selected using purposive sampling, with

Grade XI Mathematics and Natural Sciences 2 assigned as the experimental group and Grade XI Mathematics and Natural Sciences 5 as the control group. The experimental group consisted of 34 students who received instruction through a Google Sites-based flipped classroom model, while the control group, also consisting of 34 students, received conventional instruction. Prior to their use in the study, the research instruments and instructional materials were subjected to validity and reliability testing to ensure their suitability for data collection.

Instrument validity was assessed through expert judgment and empirical testing. The learning motivation questionnaire and learning achievement test were evaluated by two expert validators and obtained a mean validation score of 3.5, indicating a highly valid category. The instruments were subsequently pilot tested with Grade XI Mathematics and Natural Sciences 1 students, whose characteristics were considered comparable to those of the experimental and control groups. The pilot test was conducted to examine the empirical validity and reliability of the instruments before their implementation in the main study.

The empirical analysis of the learning motivation questionnaire showed that, of the initial 36 items, six items (Items 12, 19, 20, 21, 31, and 32) did not meet the validity criteria and were therefore excluded, leaving 30 valid items for the final instrument. The reliability of the questionnaire was subsequently assessed using Cronbach's alpha. Meanwhile, item validity for the learning achievement test was examined using Pearson's product-moment correlation. Of the initial 30 test items, four items (Items 5, 15, 22, and 24) were identified as invalid and excluded, resulting in 26 valid items used in the final learning achievement test.

The reliability of the learning motivation questionnaire was assessed using Cronbach's alpha, yielding a coefficient of 0.927. Since the obtained coefficient (0.927) exceeded the predetermined threshold of 0.60, the learning motivation questionnaire was considered reliable. Meanwhile, the reliability of the learning achievement test was assessed using the Spearman-Brown coefficient, which yielded a value of 0.936. As this coefficient was also greater than 0.60, the learning achievement test demonstrated a high level of reliability.

A normality test was conducted to determine whether the data were normally distributed and therefore suitable for analysis using parametric statistical procedures. In this study, data normality was examined using the one-sample Kolmogorov-Smirnov test in SPSS version 23. A homogeneity of variance test was subsequently conducted to determine whether the variances of the groups being compared were statistically equivalent. This assumption was examined using the homogeneity of variance procedure in SPSS version 23. Finally, an independent-samples t-test was employed to test the research hypotheses and determine whether statistically significant differences existed between experimental and control groups.

Results and Discussion

Learning Motivation

In this study, learning motivation was measured to determine the extent to which students demonstrated willingness and persistence in participating in the learning process. Learning motivation was assessed using a questionnaire covering several dimensions, including interest, attention, and achievement motivation. The results of the descriptive analysis of students' learning motivation are presented in Table 1.

Table 1
Descriptive Analysis of Learning Motivation

Statistic	Experimental Group	Control Group
Sample Size	34	34
Maximum Score	106	86
Minimum Score	82	70
Mean	92.00	76.38
Standard Deviation	6.368	4.918
Variance	40.545	24.183
Range	23	16

Table 2
Categories of Students' Learning Motivation

Score Interval	Experimental Group Frequency	Experimental Group Percentage	Control Group Frequency	Control Group Percentage	Category
$X \leq 63$	0	0%	0	0%	Very Low
$63 < X \leq 77$	0	0%	22	65%	Low
$77 < X \leq 91$	15	44%	12	35%	Moderate
$91 < X \leq 105$	19	56%	0	0%	High
$105 < X$	0	0%	0	0%	Very High

Based on the learning motivation category table, 44% of students in the experimental group were classified in the moderate category, while 56% were classified in the high category. In contrast, 65% of students in the control group were classified in the low category, whereas the remaining 35% were classified in the moderate category.

Before conducting the *t*-test to examine differences between the two groups, prerequisite analyses were performed, including tests of normality and homogeneity. The normality test was conducted to determine whether the pretest and posttest learning motivation data were normally distributed. The analysis included data from the experimental group (Grade XI Mathematics and Natural Sciences 2), which received instruction through a Google Sites-assisted flipped classroom model, and the control group (Grade XI Mathematics and Natural Sciences 5), which received instruction through a direct instruction model.

Table 3

Normality Test Results for Pretest and Posttest Learning Motivation Scores

Group	Pretest Statistic	Sig.	Posttest Statistic	Sig.
Experimental Group	0.148	0.056	0.107	0.200
Control Group	0.136	0.114	0.140	0.089

As shown in Table 3, all significance values were greater than 0.05. Therefore, the learning motivation data for both the experimental and control groups were normally distributed.

Table 4

Homogeneity Test Results for Learning Motivation

Variable	f	Sig.	Interpretation
Learning motivation	2.232	0.087	Homogeneous

As shown in Table 4, the significance value for learning motivation was $p = 0.087$. Since $p > \alpha$ ($0.087 > 0.05$), the variance in learning motivation scores across the two classes was considered homogeneous. Thus, the assumption of homogeneity of variance was satisfied.

Table 5

Independent-Samples t-Test Results for Learning Motivation

Variable	t	Sig. (2-tailed)
Learning motivation	9.153	< 0.001

As shown in Table 5, the t-test yielded a significance value of $p < 0.001$, which was lower than the predetermined significance level of 0.05. Therefore, the null hypothesis (H_0) was rejected, and the alternative hypothesis (H_1) was accepted. The experimental group obtained a mean learning motivation score of 92.00. These findings indicate that the implementation of the Google Sites-based flipped classroom model had a significant effect on students' learning motivation.

Modern technology plays an important role in transforming students' learning activities. Technological advances facilitate the implementation of active learning approaches by increasing student engagement and supporting independent learning (Bergmann et al., 2012). Technology-based learning media also enable students to access learning materials anytime and anywhere, allowing them to prepare and explore the content before attending class. Such flexibility encourages students to plan their learning activities and take greater responsibility for their own learning process (Sarpparaje et al., 2018).

The integration of Google Sites as a technology-based learning medium within the flipped classroom model can support students' learning processes while fostering positive emotions and increasing their motivation to learn. Previous research has shown that flipped classroom environments can contribute to more positive emotional responses toward learning and enhance students' motivation and engagement (Jdaitawi, 2020). Therefore, the positive effect observed in this study may be attributed to the flexibility, accessibility, and learner-centered nature of the Google Sites-based flipped classroom model.

The flipped classroom model shifts the role of teachers from being the primary source of knowledge to serving as facilitators who manage learning activities and instructional processes to help students achieve the intended learning objectives (Rusnawati, 2020). This instructional model can also be supported by Google Sites as a learning medium. Google Sites is a web-based educational platform that can be integrated with various services and applications, enabling teachers to creatively design and organize learning activities, embed YouTube videos, administer online assessments through Google Forms, and provide learning files through Google Docs (Sulasmianti, 2021). Online synchronous meetings can also be integrated through Google Meet (Supriyanto et al., 2021). The use of information technology-based learning media enables students to access instructional materials anytime and anywhere, allowing them to prepare and deepen their understanding of the content before attending class. Such flexibility encourages students to plan their learning activities and assume greater responsibility for their own learning process (Sarpparaje et al., 2018). Consequently, classroom time can be allocated more effectively to completing assignments, solving practice problems, conducting projects, and discussing previously studied materials (Walidah et al., 2020).

Through the flipped classroom model, teachers utilize online learning environments to facilitate students' access to and engagement with instructional materials (Damayanti & Utama, 2016). In flipped classroom learning, instructional content, particularly video-based materials, is provided in advance through online platforms such as Google Sites (Zheng et al., 2020). These pre-class activities are subsequently followed by face-to-face sessions in which students discuss and elaborate on the materials they have previously studied. This arrangement allows classroom activities to become more student-centered because instructional explanations that would traditionally consume class time are delivered beforehand through online learning (Rusnawati, 2020). The flipped classroom model may also promote social connectedness among students through collaborative learning activities. Such social activities can shape and strengthen interaction among learners and contribute positively to the learning process (Lag & Saele, 2019).

The flipped classroom model requires students to become more actively involved in constructing their own understanding of the knowledge to be discussed in class. Consequently, students enter subsequent classroom sessions with prior exposure to and an initial understanding of the learning materials (Dewi, 2021). Furthermore, the use of digital learning media supported by computers, communication networks, and information technology may enhance students' learning motivation because these media are flexible, interactive, network-based, and increasingly accessible through the internet (Dewi, 2021). In this regard, flipped classroom learning can strengthen students' confidence while supporting their ability and willingness to respond to academic challenges (Jdaitawi, 2019). Improvements in students' motivation and learning abilities are important factors contributing to successful learning outcomes (Syamsul et al., 2021).

Learning Outcomes

Student learning outcomes encompass the various learning experiences reflected in changes in attitudes, knowledge, and psychomotor skills. The results for the learning outcomes variable are presented through descriptive statistical analysis in Table 6.

Table 6
Descriptive Statistical Analysis of Learning Outcomes

Statistic	Experimental Group	Control Group
Sample Size	34	34
Maximum Score	96	80
Minimum Score	64	56
Mean	81.18	67.06
Standard Deviation	9.318	7.373
Variance	86.816	54.3609
Range	32	24

Table 7
Categories of Students' Learning Achievement

Score Interval	Experimental Group Frequency	Experimental Group Percentage	Control Group Frequency	Control Group Percentage	Category
80–100	21	62%	3	9%	Very Good
66–79	11	32%	15	44%	Good
56–65	2	6%	16	47%	Fair
40–55	0	0%	0	0%	Poor
30–39	0	0%	0	0%	Very Poor

Based on the learning achievement categories presented in Table 7, 62% of students in the experimental group were classified in the very good category, 32% in the good category, and 6% in the fair category. In contrast, in the control group, 9% of students were classified in the very good category, 44% in the good category, and 47% in the fair category. These findings indicate that students in the experimental group tended to achieve higher learning outcomes than those in the control group.

A normality test was conducted to determine whether the pretest and posttest learning achievement data were normally distributed. The results of the normality test for both the experimental group (Grade XI Mathematics and Natural Sciences 2), which received instruction through a Google Sites-based flipped classroom model, and the control group (Grade XI Mathematics and Natural Sciences 5), which received direct instruction, are presented in Table 8.

Table 8
Normality Test Results for Pretest and Posttest Learning Achievement Scores

Group	Pretest Statistic	Sig.	Posttest Statistic	Sig.
Experimental Group	0.139	0.100	0.119	0.200
Control Group	0.146	0.065	0.131	0.145

As shown in Table 8, the significance values for both the pretest and posttest learning achievement scores in the experimental and control groups were greater than 0.05. Therefore, the data for both groups were considered to satisfy the assumption of normality. A homogeneity test was subsequently conducted to determine whether the variance of the data was homogeneous across groups. The results of the homogeneity test are presented below.

Table 9
Homogeneity Test Results for Learning Achievement

Variable	f	Sig.	Interpretation
Learning achievement	0.863	0.462	Homogeneous

As shown in Table 9, the homogeneity of variance was examined using Levene's test for equality of error variances at a predetermined significance level of $\alpha = 0.05$. The analysis was performed using SPSS version 23. The test yielded a significance value of $p = 0.462$ for learning achievement. Since the p -value was greater than the significance level ($0.462 > 0.05$), the variance in learning achievement scores was considered homogeneous across the experimental and control groups.

Hypothesis testing was subsequently conducted using an independent-samples t -test to determine whether the Google Sites-based flipped classroom learning model had a significant effect on students' learning achievement. The independent-samples t -test was performed using SPSS version 23 to compare the motivation and learning achievement scores of students in the experimental and control groups.

Table 10
Independent-Samples t-Test Results for Learning Achievement

Variable	t	Sig. (2-tailed)
Learning achievement	6.928	0.000

As shown in Table 10, the independent samples t -test yielded a significance value of 0.000 for learning achievement. Because the significance value was lower than the predetermined alpha level of 0.05 ($p < 0.05$), the null hypothesis (H_0) was rejected, and the alternative hypothesis (H_1) was accepted. These results indicate a statistically significant difference in learning achievement between students taught using the Google Sites-based flipped classroom model and those taught using conventional instruction.

Hypothesis testing was conducted using an independent samples t -test. The obtained significance value (2-tailed) for learning achievement was lower than the significance criterion of 0.05. This finding was also supported by the difference in mean learning achievement scores between the two groups. The experimental group achieved a mean score of 81.18, which was higher than the mean score of 67.06 obtained by the control group. These results indicate that students taught through the Google Sites-based flipped classroom model achieved better learning outcomes than those taught through direct or conventional instruction.

The implementation of the Google Sites-based flipped classroom model offers several advantages. It can increase students' enthusiasm for engaging with learning materials by providing a different learning experience, promote greater student participation, improve focus during learning activities, provide greater flexibility in terms of learning time and place, and facilitate students' understanding of the learning materials (Darmawan et al., 2020). The integration of Google Sites into the flipped classroom model may therefore provide a positive learning experience for students. Similarly, technology-based learning media containing instructional materials, videos, and educational games can support students in learning independently at home while allowing them to adjust the learning process to their individual learning pace (Sulasmi, 2021).

The integration of the flipped classroom model with Google Sites as an online learning platform has been shown to have positive effects on students, particularly in terms of learning evaluation and students' attention during the instructional process (Tang et al., 2020). This finding is consistent with Pratiwi et al. (2017), who reported that in a flipped classroom, students access and study learning materials at home before attending face-to-face classroom sessions. Consequently, students acquire preliminary conceptual understanding before class, allowing classroom time to be devoted primarily to brief clarification of key concepts, question-and-answer activities, and discussions of material that remains difficult to understand. This learning approach can facilitate deeper understanding while enabling students to use classroom time more effectively and efficiently. Moreover, it can enhance students' learning motivation and promote independent learning skills (Nuriyansyah, 2020). Therefore, integrating the flipped classroom model with Google Sites has the potential to improve students' learning outcomes (Sahara & Rani, 2020). In the longer term, the implementation of the flipped classroom as an instructional model may also contribute to sustained improvements in student learning achievement (Holm et al., 2022).

Conclusion

The results of the independent-samples t-test showed a statistically significant difference in learning motivation between the experimental and control groups ($p < .001$). A statistically significant difference was also found in learning outcomes between the two groups ($p < .001$). These findings indicate that students in the experimental group demonstrated higher learning motivation and learning outcomes than those in the control group. The mean learning motivation score was 92.00 in the experimental group and 76.38 in the control group. Similarly, the mean learning outcome score was 81.18 in the experimental group, compared with 67.06 in the control group. These results suggest that the implementation of the Google Sites-based flipped classroom model was associated with higher levels of student learning motivation and academic achievement.

References

- Arnata, I. W., Mardana, I. B. P., & Suwindra, I. N. P. (2020). Pengaruh Model Pembelajaran Problem Based Flipped Classroom Terhadap Keterampilan Pemecahan Masalah Siswa Kelas XI IPA. *Jurnal Pendidikan Fisika Undiksha*, 10(1), 36–48. <https://doi.org/10.23887/jjpf.v10i1.26723>
- Bergman, Jonathan, & Aaron, S. (2012). *Flip Your Classroom: Reach Every Student in Every Class Every Day*. International Society for Technology in Education.
- Damayanti, H. N., & Utama, S. (2016). Efektivitas Flipped Classroom Terhadap Sikap Dan Ketrampilan Belajar Matematika Di SMK. *Jurnal Managemen Pendidikan*, 11(1), 2–8. <https://doi.org/10.23917/jmp.v11i1.1799>
- Darmawan, W., Kuswandi, D., & Praherdhiono, H. (2020). Pengaruh Blended Learning Berbasis Flipped Classroom pada Mata Pelajaran Prakarya Terhadap Hasil Belajar Siswa Kelas X SMK. *Jurnal Kajian Teknologi Pendidikan*, 5(1), 170–179. <https://doi.org/http://dx.doi.org/10.17977/um039v5i22020p170>
- Dewi, P. (2021). Pengaruh Flipped Learning Terhadap Pembelajaran Pendidikan Agama Islam Untuk Meningkatkan Motivasi Belajar Siswa di SD Negeri 3 Parepare. *Jurnal Al-Athfaal*, 3(2).
- Fauzan, M., Haryadi, & Haryati, N. (2021). Model Flipped Classroom dan Media Google classroom Sebagai Solusi Pembelajaran Bahasa Indonesia Abad 21. *Dwija Cendekia: Jurnal Riset Pedagogik*, 5(2), 361–371. <https://doi.org/https://doi.org/10.2096/jdc.v5i2.55779>
- Holm, L. B., Rognes, A., & Dahl, F. A. (2022). A randomized controlled trial of flipped vs traditional classroom teaching in a university-level statistics and epidemiology course. *International Journal Of Educational Research Open*, 3, 1–9. <https://doi.org/10.1016/j.ijedro.2022.100197>
- Jdaitawi, M. (2019). The Effect of Flipped Classroom Strategy on Students Learning Outcomes. *International Journal of Instruction*, 12(3), 665–680. <https://doi.org/10.29333/iji.2019.12340a>
- Jdaitawi, M. (2020). Does Flipped Learning Promote Positive Emotions in Science Education? A Comparison between Traditional and Flipped Classroom Approaches. *The Electronic Journal of E-Learning*, 18(6), 516–524. <https://doi.org/10.34190/JEL.18.6.004>
- Lag, T., & Saele, R. G. (2019). Does the Flipped Classroom Improve Student Learning and Satisfaction? A Systematic Review and Meta-Analysis. *Journal of Aera Open*, 5(3), 1–17. <https://doi.org/10.1177/2332858419870489>
- Nuriyansyah, F. (2020). Efektivitas penggunaan media online dalam meningkatkan hasil belajar pada Mahasiswa pendidikan Ekonomi saat awal pandemic COVID-19. *Jurnal Pendidikan Ekonomi Indonesia*, 1(2), 61–65. <https://doi.org/10.17509/jpei.v2i1.28346>
- Pratiwi, A., Sahputra, R., & Hadi, L. (2017). Pengaruh Model Flipped Classroom terhadap Self-Confidence dan Hasil Belajar Siswa SMAN 8 Pontianak. *Jurnal Pendidikan Dan Pembelajaran*, 6(1), 1–13. <https://doi.org/10.26418/jppk.v6i1.22723>
- Purwati, D., & Alifi, N. P. N. (2018). Pengembangan Media Evaluasi Pembelajaran Sejarah Berbasis Google Formulir di SMAN 1 Prambanan. *ISTORIA: Jurnal Pendidikan Dan Ilmu Sejarah*, 14(1). <https://doi.org/DOI: 10.21831/istoria.v14i1.19398>
- Rusnawati, M. D. (2020). Implementasi Flipped Classroom Terhadap Hasil Dan Motivasi Belajar Siswa. *Jurnal Ilmiah Pendidikan Dan Pembelajaran*, 4(1), 139–150. <https://doi.org/10.23887/jipp.v4i1.18238>
- Sahara, R., & Rani, S. (2020). Pengaruh Penerapan Model Pembelajaran Flipped Learning Dan Motivasi Belajar Terhadap Hasil Belajar Siswa. *Jurnal Pendidikan Ekonomi*, 3(3), 419–429.

<https://doi.org/10.24036/jmpe.v3i3.9918>

Sams, A. (2014). *Definition of Flipped Learning*.

Sarpparaje, M., Jeusala, V. ., Rathiga, K., & K.Sasirekha. (2018). Flipped Classroom Approach to make the best Utilization of ESL Classes of ESL Classes at mepco Schlenk Engineering College- A Try Out. *The Asian ESP Journal*, 14(12), 209–228.

Sulasmianti, N. (2021). Pembelajaran Berbasis WEB Memanfaatkan Google Sites. *Jurnal Wawasan Pendidikan Dan Pembelajaran*, 9(2), 1–11.

Supriyanto, N., Faisal, M., Aji, B. P., & Putri, H. (2021). The Use of Google Sites Media in Learning at Madrasah Ibtidaiyah Ma'arif Labschool Sintang During The Covid-19 Pandemic'. *International Journal of Graduate of Islmaic Education*, 2(2), 93–105. <https://doi.org/10.37567/ijgie.v2i2.875>

Syamsul, Rahim, A., Syahriani, Mardin, H., & Alonemarera, A. . (2021). Profil Motivasi Belajar Peserta Didik Pada Pelajaran Biologi Kelas XI IPA SMAN di Kabupaten Sinjai. *Al-Ahya: Jurnal Pendidikan Biologi*, 3(1), 1–9. <https://doi.org/10.24252/al-ahya.v3i2.22508>

Tang, T., Abuhmaid, A. M., Olaimat, M. M., Outdat, D. M., Aldhaeebi, M., Aldhaeebi, M. A., & Bamanger, E. (2020). Efficiency of flipped Classroom with Online-Based Teaching Under Covid-19. *Interactive Learning Environments*, 1–12. <https://doi.org/10.1080/10494820.2020.1817761>

Trianto. (2007). *Model-Model Pembelajaran Inovatif Berorientasi Konstruktif*. Prestasi Pustaka Publisher.

Ulya, M. R., Issnarto, R., & Wardono. (2019). Efektivitas Pembelajaran Flipped Classroom dengan Pendekatan Matematika Realistik Indonesia Terhadap Kemampuan Representasi Ditinjau dari Self-Efficacy. *Jurnal Prisma*, 2.

Walidah, Z., Wijayanti, R., & Affaf, M. (2020). Pengaruh Model Pembelajaran Flipped Classroom(FC)terhadap Hasil Belajar. *Jurnal Pendidikan Matematika*, 10(2), 71–77. <https://doi.org/10.22437/edumatica.v10i2.10546>

Zain, & Parah, M. (2019). Flipped Classroom: Implementasi Aplikasi Web 2.0 dalam Reka bentuk Pembelajaran. *Jurnal Seminar Wacana Pendidikan*.

Zheng, L., Bhagat, K. K., Zhen, Y., & Zhang, X. (2020). The effectiveness of the Flipped Classroom on Students' Learning Achievement and Learning Motivation: A Meta-Analysis. *Educational Technology & Society*, 23(1), 1–15. [https://doi.org/10.30191/ETS.202001_23\(1\).0001](https://doi.org/10.30191/ETS.202001_23(1).0001)