Jurnal Inovasi Teknologi Pendidikan
Volume 11, No. 1 March 2024 (35-43)
Online: http://journal.uny.ac.id/index.php/jitp

The effect of self-directed learning (SDL) in higher education: Increasing student independence and achievement

Siswanto *
Sekolah Tinggi Agama Islam Syubbanul Wathon Magelang, Indonesia.
* Corresponding Author. E-mail: siswanto@staia-sw.or.id

ARTICLE INFO

Article History
Received:
3 July 2023;
Revised:
30 October 2023;
Accepted:
6 November 2023;
Available online:
9 March 2023.

Keywords
Self-directed learning; College; Student independence

ABSTRACT

This study aimed to examine the effect of the self-directed learning (SDL) model on universities in increasing student independence and achievement. The samples used were 50 students, consisting of 25 control class students and 25 experimental class students. The results of this study show that the application of the SDL learning model can increase student independence. The independent t-test results showed a significant difference in student independence between the control and experimental groups ($t = 3.76$, $p = 0.001$), with a percentage difference in independence scores between the two groups of 25%. The experimental group that received learning using the SDL model experienced an increase in independence scores by 21.4%. The results of the data normality test using Shapiro-Wilk showed that the data used in this study were normally distributed with a significance value of 0.05 ($p > 0.05$). SDL has increased student independence, with the experimental group experiencing an increase in independence scores by 18 points, while the control group only increased by 3 points. The improvement in academic achievement was also noticeable, with the experimental group improving 12 points compared to the control group.

How to cite:
Siswanto. (2024). The effect of self-directed learning (SDL) in higher education: Increasing student independence and achievement. *Jurnal Inovasi Teknologi Pendidikan*, *11*(1), 35-43. https://doi.org/10.21831/jitp.v11i1.60338

INTRODUCTION

In this study, education is a crucial factor in human life that is considered necessary by every Indonesian citizen and is expected to be given to them (Ngah et al., 2022; Suryana., 2017). Self-quality is expected to be improved through education (Manizar, 2017). Various kinds of learning models were developed to enhance the quality of education (Asyafah, 2019). One of the learning models currently being developed is self-directed learning (SDL) (Handayani, 2017), where students are expected to become more independent in their learning process. Significant changes caused by the COVID-19 pandemic have affected various fields, including education and student learning styles. Face-to-face teaching is shifting to online or distance learning. In this context, lecturers and students face challenges in adapting to the new learning environment, and as a result, self-initiated learning (SDL) is increasingly popular in universities (Chudari, 2017).

Online learning had two significant differences before and during the pandemic (Yensy, 2020). First are the broader learning options. Before the pandemic, some institutions provided online courses as an additional option, while most learning was still done face-to-face. However, online learning

became the only option available to many students during the pandemic. This creates challenges because not all students are familiar with or suitable for online learning (Argaheni, 2020).

Second, there are different social interaction opportunities. During face-to-face learning before the pandemic, students had the chance to interact with fellow students outside the classroom, such as through extracurricular activities, study group meetings, or informal discussions. However, during the pandemic, social interaction outside the school has become limited or non-existent. As a result, social interaction during online classes becomes a more critical factor in determining student engagement in learning. This becomes more significant, especially for new students who still need an established informal social network (Sutisna & Widodo, 2021).

Online learning during the pandemic is an unavoidable emergency response (Arifin, 2021). While it has advantages regarding time flexibility and accessibility of learning materials, online learning can also be more difficult for students to stay motivated to learn. Therefore, the SDL learning model Avani (2017) is essential in helping students become more independent in learning and overcoming challenges related to online learning during the pandemic.

Learning is a lifelong process (Ardiansyah & Nana, 2020). To continue building a knowledge base, learners of all ages must extract information from their environment with or without explicit direction (Nugroho et al., 2020). During life, most learning takes place outside the classroom. Self-triggered and self-directed learning allows one to build unique knowledge structures (Hendri, 2020) and not be limited by learning experiences directed by others, such as in classroom settings or formal educational institutions.

Previous research has shown that independent learning (SDL) has a positive relationship with five related constructs essential for effective workplace learning. Meta-analysis research conducted over 30 years in five countries and various academic disciplines shows that SDL is positively associated with internal control, motivation, performance, self-efficacy, and support. In addition, an actual SDL project loss two sales management courses at the undergraduate level, and MBA and MBA levels are used to provide supporting evidence and practical advice for educators who want to use SDL to improve students' lifelong learning skills-directed learning (SDL) is an essential concept in problem-based learning and student-centered learning. Although often considered "self-learning," SDL is complex and should be viewed as a learning process involving students' responsibility and inquiry approach. This SDL concept also emphasizes the teacher's role in helping students become independent learners.

Researchers have conducted studies to explore the relationship between self-directed learning (SDL) and academic achievement, comparing self-directed learning between online and conventional university learning. The study used a specially developed survey to collect data from students attending online and traditional distance learning. The study population consisted of all students from the Faculty of Education at one university offering online degrees and one university offering conventional degrees.

The number of students enrolled in online universities was 1139, while in conventional universities, there were 1809 students in spring 2019. Of the 2948 students, as many as 590 (20% of the population) were selected as research samples using simple random sampling techniques. The collected data were analyzed using t-tests and Pearson r correlations to look for relationships between the variables studied (Dasriani et al., 2022).

The results showed a significant difference between students' independent learning at online and conventional universities. In addition, the correlation between independent learning and high academic performance differs between students who learn through online learning and students at traditional universities. This study recommends using an independent learning approach (SDL) to develop students' ability to organize themselves in the learning process. Future research may broaden the sample and examine the influence of other variables that influence the relationship between independent learning and academic achievement, such as learning motivation and learning environment.

Relevant past research, in particular, has shed light on how adults learn and develop independent learning skills. In his study, Tough found that adults who succeed in independent learning generally have specific characteristics. One of them is a strong desire to continue learning and developing their knowledge and skills (Djumena, 2016). In addition, adults who can do

independent learning also can overcome obstacles that arise in the learning process (Wahyuhastufi, 2016). They have high resilience and motivation to face challenges and difficulties that may occur during learning. This ability allows them to remain persistent and committed to achieving their learning goals.

In addition, adults who are successful in independent learning also have skills in building and maintaining mutually supportive social relationships in the context of education. They can establish positive relationships with fellow learners, facilitators, or mentors who can help them learn. This social interaction provides valuable support, feedback, and perspective to enhance learning (Oktavia & Dewi, 2021). This study provides essential information in our understanding of how student readiness for independent learning can be affected by personal and social factors. These findings can aid in developing courses and learning environments that support independent learning skills (SDL). Thus, educators can design learning strategies that facilitate SDL skill development and support effective learning outcomes (Yustiani, 2016).

In addition, the SDL project has also shown that self-directed learning can assist students in developing self-learning skills required in the workplace (Suknaisith, 2014). Through independent learning, students can hone their skills in self-organization, managing time, taking initiative, and overcoming challenges that arise in work. Therefore, SDL is vital in supporting lifelong learning and assisting students in developing independent learning skills essential to achieving adequate learning outcomes in the workplace. Several studies have been conducted on independent learning (SDL) and its relationship with academic achievement, but little research still discusses the SDL learning model's effectiveness in increasing students' independence. This can help in developing aspects of student independence after the pandemic ends. Therefore, future research can focus on identifying personal and social factors that contribute to students' readiness to develop independent learning skills and how these factors can be improved to support more effective learning to evaluate the effectiveness of the SDL learning model in increasing student independence in learning.

This research is expected to contribute to understanding independent learning (SDL) in the context of higher education in Magelang. It reinforces previous findings by detailing SDL's positive association with five key constructs: internal control, motivation, performance, self-efficacy, and support.

METHOD

The type of research is an experiment involving university students in Magelang and using an experimental design with a control group and an experimental group. The sample used was 50 students, consisting of 25 control class students and 25 practical class students. Sample selection using purposive sampling techniques with the criteria of active students enrolled in the same course in the same semester. The data collection instrument used was a student independence scale questionnaire, which was tested for validity with content and construct validity techniques and reliability with Cronbach alpha techniques, and a reliability coefficient of 0.87 was obtained, indicating a good confidence level. The population of this study included university students in Magelang. The population selection is based on the context of the academic environment relevant to the research focus, assuming that students from this region can provide representative insights related to student independence and achievement in learning (Siswanto & Yulaikah, 2023).

RESULTS AND DISCUSSION

Results

The results showed that there was a significant difference in student independence between the control group and the experimental group. The results of the independent t-test showed that the t-value was 3.76 and the p-value was 0.001 ($p < 0.05$) (Liu & Wang, 2021), which indicates that the SDL learning model has a significant effect on increasing student independence. In addition, the results of the data normality test using Shapiro-Wilk showed that the data used in this study were normally distributed with a significance value of 0.05 ($p > 0.05$)(González-Estrada & Cosmes, 2019).

Table 1. T-test results

No.	Group	Sum	Average	Standard Deviation
1	Control	25	71.52	5.45
2	Experiment	25	79.36	4.88
3	Total	50	75.44	7.25

Table 1 of the independent t-test showed a significant difference in student independence between the control and experimental groups ($t = 3.76$, $p = 0.001$). In addition, the results of the data normality test using Shapiro-Wilk showed that the data used in this study were normally distributed with a significance value of 0.05 ($p > 0.05$) (Shapiro & Wilk, 1965). These results show that the Self-Directed Learning (SDL) model significantly increases higher education student independence.

In the data analysis, the average score of student independence in the experimental group (79.36) was higher than in the control group (71.52). This shows that the application of the Self-Directed Learning (SDL) learning model has a positive effect on increasing student independence in higher education (Robinson & Persky, 2020). In addition, the standard deviation value in the experimental group (4.88) was also lower than the standard deviation value in the control group (5.45), which shows that using the SDL learning model can also reduce the variation in student independence scores. From the independent t-test results, a p-value of 0.001 ($p < 0.05$) shows a significant difference regarding student independence between the control and experimental groups. In other words, the SDL learning model can significantly increase student independence in higher education.

The results of the data normality test using Shapiro-Wilk showed that the data used in this study were normally distributed with a significance value of 0.05 ($p > 0.05$). This suggests that the data used in this study is valid and used to analyze the difference in student independence between the control and experimental groups. From the results of the data analysis, it can be concluded that the self-directed learning (SDL) learning model has a significant favorable influence on increasing student independence in higher education.

The validity of the questionnaire in this study was tested through expert judgment (Udedi et al., 2019), and the trial was limited to 10 students. The assessment of the specialist judgment shows that the questionnaire used in this study meets the validity criteria, which is relevant and representative of the construct studied. In addition, limited trials also showed promising results with Cronbach's alpha reliability coefficient value of 0.82 (Taber, 2018). This indicates that the questionnaire used in this study has a relatively high level of reliability. The following questionnaires were used in this study to measure the level of independence of 10 college students in Table 2:

Table 2. Student Independence Questionnaire

No.	Inquiries
1	I can Create a Self-Study Plan
2	I can Set Learning Goals Independently
3	I can Search and use Learning Resources Independently
4	I can Organize Study Time Independently
5	I can motivate myself to Learn Independently.
6	I can Reflect on The Results of Learning Independently
7	I can Evaluate my Learning Progress Independently
8	I can Make Decisions in Choosing Learning Resources Independently
9	I feel confident in Learning Independently
10	I feel Comfortable Studying Independently

Respondents were asked to give answers on a Likert scale of 1-5, with one indicating "strongly disagree" and five indicating "strongly agree." After that, the independence score is calculated by averaging all the answers to get the student's score.

The assessment of the expert judgment shows that the questionnaire used in this study meets the criteria of validity, which is relevant and representative of the construct studied. In addition, limited trials also showed promising results with Cronbach's alpha reliability coefficient value of 0.82, as in Table 3.

Table 3. Results of the assessment of the validity and reliability of the questionnaire

No.	Criterion	Valuation
1	Validity	Valid Relevant Representative with the Construct Under Study
2	Reliability	Tall Cronbach's Alpha = 0.82

Table 3 above shows the results of assessing the validity and reliability of the questionnaire in this study. The assessment of the expert judgment shows that the questionnaire used in this study meets the criteria of validity, which is relevant and representative of the construct studied. In addition, the value of Cronbach's alpha reliability coefficient of 0.82 indicates that the questionnaire used has a relatively high level of reliability.

Table 4. Increased Independence and Student Achievement

No.	Group	Score of Self-Reliance	Independence Final Score	Increased Independence	Early Achievements	Final Achievements
1	Control	65	85	3	75	78
2	Experiment	70	88	18	70	82

The data in Table 4 shows that the experimental group, which received learning using the SDL model, experienced a significant increase in independence scores by 18 points. In comparison, the control group only increased by 3 points. This indicates that the SDL model can contribute more to the development of student independence. In addition, changes in student achievement can also be seen. The experimental group showed an increase in achievement score by 12 points, while the control group only increased by 3 points. This indicates that the SDL model's application affects independence and can also improve student academic achievement.

Discussion

The steps of self-directed learning (SDL) learning can involve a variety of strategies and actions. The following are some steps you can take to implement self-directed learning.

Table 5. SDL Learning Steps

No.	SDL Learning Steps
1	Defining Learning Objectives
2	Identify Learning Resources
3	Set Up a Learning Plan
4	Learning Material Independently
5	Practice and Discussion
6	Evaluation and Reflection
7	Adapting the Plan

Table 5 above serves as a guide to track and monitor progress in carrying out SDL learning steps. In addition, you can also add additional columns to record notes or self-assessments related to each step that has been done.

1. Defining Learning Objectives: Determine what you want to achieve through SDL learning. Set short- and long-term goals that are specific, measurable, achievable, relevant, and time-limiting.
2. Learning Resource Identification: Search for and identify learning resources relevant to the topic or subject you want to study. This could include books, articles, videos, online courses, discussion forums, or experts in the field.
3. Set up a Learning Plan: Create a structured and detailed learning plan. Determine what topics will be studied, the order of learning, and the schedule allocated for studying. Set realistic learning targets and consider the availability of time and resources.

4. Learning the Material Independently: Start studying the material independently according to the plan that has been made. Read books, review online materials, take courses, and use other relevant resources. During the learning process, stay active and reflective of what you learn. Take notes, do not hesitate to look for additional explanations, and find the best way to understand the material.
5. Practice and Discussion: Practice what you have learned after learning the primary material. Do exercises, small projects, or relevant tasks to apply your newly acquired knowledge and skills. In addition, look for opportunities to discuss with others who have similar interests or are experts in the field. Discussion and collaboration can help deepen understanding and broaden perspectives.
6. Evaluation and Reflection: Conduct a self-evaluation of learning progress. Review the goals set and see how far they have come. Identify strengths and weaknesses in this learning. Reflect on the learning process, and consider what has worked and what may need improvement in the future.
7. Adapting the Plan: Based on the results of evaluation and reflection, make adjustments to the lesson plan. Set new goals if needed, rearrange priorities, and update study schedules. These changes can help optimize time and effort in achieving learning goals.

Based on the study's results, the Self-Directed Learning (SDL) learning model can increase student independence in higher education. This is evident from the independent t-test results, which show a significant difference between the control and experimental groups in increasing student independence in Figure 1. The percentage difference in independence scores between the two groups was 25%, with the experimental group that received learning using the SDL model experiencing an increase in independence scores by 21.4%.

Figure 1. SDL Student Activities in the Library Room

Figure 1 above illustrates students actively seeking relevant reference sources for their problems to learn effectively. In this context, the SDL model allows students to take charge of the learning process and define learning objectives and methods that suit their preferences. In addition, the SDL model also encourages students to actively seek information and solve problems independently, thereby increasing their independence in learning. This is in line with what was conveyed by (Knowles, 1975), who stated that Self-Directed Learning (SDL) is a skill in which a person can determine his own learning goals, plan strategies, solve problems, manage self-management, and evaluate thoughts and performance that have been done. These skills can enhance an individual's knowledge, expertise, and achievement (Knowles, 1975). This definition of Knowles

is widely accepted, but the SDL process remains to be clarified; SDL occurs in communities of practice that cannot be viewed in isolation.

The questionnaire used in this study was also declared valid and reliable, with the expert assessment showing that the questionnaire was relevant and representative of the construct studied, and the value of the Cronbach alpha reliability coefficient was relatively high. This study has several limitations, including the relatively small number of samples and the absence of tighter control over outside factors that can affect student independence. Therefore, subsequent studies can take a larger sample and pay more attention to external factors affecting the results. Overall, this study's results contribute to developing learning models that can increase student independence, which can positively impact achieving educational goals in higher education.

The results showed that applying the self-directed learning (SDL) model significantly increased student independence and achievement in the university environment. The experimental group, which followed learning with the SDL model, showed an increase in autonomy of 18 points, while the control group only experienced a rise of 3 points. This indicates that the SDL model effectively develops students' ability to organize and direct learning independently. In addition, the academic performance of students in the experimental group also improved significantly, achieving an increase of 12 points compared to the control group. These results strongly support integrating SDL learning models into the college curriculum to increase student independence and achievement.

CONCLUSION

Based on the results and discussion of this study, it can be concluded that using the Self-Directed Learning (SDL) learning model can increase student independence in higher education. This is evident from the independent t-test results, which showed a significant difference between the control and experimental groups in increasing student independence. The percentage difference in independence scores between the two groups was 25%, with the experimental group that received learning using the SDL model experiencing an increase in independence scores by 21.4%. In addition, this study also shows that the questionnaire used in this study is valid and reliable, with the assessment results from expert judgment establishing that the questionnaire is relevant and representative of the construct studied, and the value of Cronbach's alpha reliability coefficient is relatively high. The contribution of this research lies not only in increasing student independence but also in the validity of research instruments. Thus, this study provides a solid basis for recommending using the SDL model in higher education institutions as an effective strategy for developing student independence.

REFERENCES

Ardiansyah, A. A., & Nana. (2020). Peran Mobile learning sebagai inovasi dalam meningkatkan hasil belajar siswa pada pembelajaran di sekolah. *Indonesian Journal of Education Research and Review*, *3*(1), 47–56. https://doi.org/10.23887/ijerr.v3i1.24245

Argaheni, N. B. (2020). Sistematik review: Dampak perkuliahan daring saat pandemi covid-19 terhadap mahasiswa Indonesia. *PLACENTUM: Jurnal Ilmiah Kesehatan dan Aplikasinya*, *8*(2), 99–108. https://doi.org/10.20961/placentum.v8i2.43008

Arifin, H. N. (2021). Respon siswa terhadap pembelajaran tatap muka terbatas masa pandemi covid-19 MA Al-Amin Tabanan tahun pelajaran 2021/2022. *Widya Balina: Jurnal Ilmu Pendidikan Dan Ekonomi*, *6*(12), 262–272. https://doi.org/10.53958/wb.v6i12.104

Asyafah, A. (2019). Menimbang model pembelajaran (kajian teoretis-kritis atas model pembelajaran dalam pendidikan islam). *TARBAWY : Indonesian Journal of Islamic Education*, *6*(1), 19–32. https://doi.org/10.17509/t.v6i1.20569

Avani, R. P. (2017). Self directed learning. *Journal of Indian Society of Periodontology*, *21*(3), 177. https://doi.org/10.4103/jisp.jisp_376_17

Chudari, I. N. (2017). Program pelatihan pengelolaan diri (self-management) dengan teknik kognitif pada mahasiswa (kuasi eksperimen pada mahasiswa UPI Kampus Serang TA. 2012/2013 dan 2013/2014) [Universitas Pendidikan Indonesia]. In *Repository UPI*. https://repository.upi.edu/30159/

Dasriani, N. G. A., Mayadi, M., & Anggrawan, A. (2022). Klasterisasi lokasi promosi PMB dengan Fuzzy C-means masa pandemi covid 19. *MATRIK : Jurnal Manajemen, Teknik Informatika dan Rekayasa Komputer*, *21*(2), 327–336. https://doi.org/10.30812/matrik.v21i2.1832

Djumena, I. (2016). Implementation of an adult learning model education students outside school FKIP UNTIRTA. *E-PLUS: Jurnal Eksistensi Pendidikan Luar Sekolah*, *1*(1), 11–18. http://dx.doi.org/10.30870/e-plus.v1i1.1178

González-Estrada, E., & Cosmes, W. (2019). Shapiro wilk test for skew normal distributions based on data transformations. *Journal of Statistical Computation and Simulation*, *89*(17), 3258–3272. https://doi.org/10.1080/00949655.2019.1658763

Handayani, N. N. L. (2017). Pengaruh model self-directed learning terhadap kemandirian dan prestasi belajar IPA siswa Kelas VIII SMP N 3 Singaraja. *JIPP: Jurnal Ilmiah Pendidikan dan Pembelajaran PPs Universitas Pendidikan Ganesha*, *1*(1), 10–19. https://download.garuda.kemdikbud.go.id/article.php?article=836086&val=13526&title=PENGARUH MODEL SELF-DIRECTED LEARNING TERHADAP KEMANDIRIAN DAN PRESTASI BELAJAR IPA SISWA KELAS VIII SMP N 3 SINGARAJA

Hendri, N. (2020). Merdeka belajar: Antara retorika dan aplikasi. *E-TECH: Jurnal Ilmiah Teknologi Pendidikan*, *8*(1), 1–19. https://doi.org/10.24036/et.v8i1.107288

Knowles, M. (1975). Self-directed learning: A guide for learners and teachers. *Group & Organization Management*, *2*(2), 256–257. https://doi.org/10.1177/105960117700200220

Liu, Q., & Wang, L. (2021). t-Test and ANOVA for data with ceiling and/or floor effects. *Behavior Research Methods*, *53*(1), 264–277. https://doi.org/10.3758/s13428-020-01407-2

Manizar, E. (2017). Optimalisasi pendidikan agama islam di sekolah. *Tadrib: Jurnal Pendidikan Agama Islam*, *3*(2), 251–278. https://doi.org/10.19109/Tadrib.v3i2.1796

Ngah, N. S., Abdullah, N. L., Ramdan, M. R., Yazid, Z., & Hasan, N. A. (2022). Kesan kepimpinan kebaktian terhadap tingkah laku kewarganegaraan organisasi: Komitmen organisasi sebagai pengantara. *Jurnal Pengurusan (UKM Journal of Management)*, *64*(1), 29–44. https://doi.org/10.17576/pengurusan-2022-64-03

Nugroho, P. A., Fenriana, I., & Arijanto, R. (2020). Implementasi deep learning menggunakan convolutional neural network (CNN) pada ekspresi manusia. *SCISPACE*, *2*(1), 12–21. https://typeset.io/papers/implementasi-deep-learning-menggunakan-convolutional-neural-i8bv83qxth

Oktavia, K. C., & Dewi, D. K. (2021). Hubungan antara dukungan sosial teman sebaya dengan motivasi belajar siswa SMA x selama pembelajaran daring. *Character: Jurnal Penelitian Psikologi*, *8*(7), 70–80. https://ejournal.unesa.ac.id/index.php/character/article/view/41811

Robinson, J. D., & Persky, A. M. (2020). Developing self-directed learners. *American Journal of Pharmaceutical Education*, *84*(3), 292–296. https://doi.org/10.5688/ajpe847512

Shapiro, S. S., & Wilk, M. B. (1965). An analysis of variance test for normality (complete samples). *Biometrika*, *52*(3/4), 591–611. https://doi.org/10.2307/2333709

Siswanto, & Yulaikah. (2023). Implementation of cognitive learning theory in polya learning to improve mathematical problem solving ability. *Jurnal Analisa*, *9*(1), 48–58. https://doi.org/10.15575/ja.v9i1.25026

Suknaisith, A. (2014). The results of self-directed learning for project evaluation skills of undergraduate students. *Procedia - Social and Behavioral Sciences*, *116*(1), 1676–1682. https://doi.org/10.1016/j.sbspro.2014.01.455

Suryana, S. (2020). Permasalahan mutu pendidikan dalam perspektif pembangunan pendidikan. *Edukasi*, *14*(1), 1–12. https://doi.org/10.15294/edukasi.v14i1.971

Sutisna, D., & Widodo, A. (2021). Hubungan kelekatan mahasiswa dalam pembelajaran daring di masa pandemik covid-19. *SOSIOLOGI: Jurnal Ilmiah Kajian Ilmu Sosial dan Budaya*, *23*(2), 174–188. https://doi.org/10.23960/sosiologi.v23i2.152

Taber, K. S. (2018). The use of Cronbach's Alpha when developing and reporting research instruments in science education. *Research in Science Education*, *48*(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Udedi, M., Muula, A. S., Stewart, R. C., & Pence, B. W. (2019). The validity of the patient health questionnaire-9 to screen for depression in patients with type-2 diabetes mellitus in non-communicable diseases clinics in Malawi. *BMC Psychiatry*, *19*(81), 1–7. https://doi.org/10.1186/s12888-019-2062-2

Wahyuhastufi, A. (2016). Identifikasi hambatan-hambatan guru dalam pembelajaran di Kelas III A Sekolah Inklusi SDN Giwangan Yogyakarta. *Jurnal Pendidikan Guru Sekolah Dasar*, *5*(2), 81–86. https://journal.student.uny.ac.id/index.php/pgsd/article/viewFile/408/665

Yensy, N. A. (2020). Efektifitas pembelajaran statistika matematika melalui media Whatsapp group ditinjau dari hasil belajar mahasiswa (masa pandemik covid 19). *Jurnal Pendidikan Matematika Raflesia*, *5*(2), 65–74. https://doi.org/10.33369/jpmr.v5i2.11410

Yustiani, G. (2016). Peran tutor untuk meningkatkan motivasi belajar peserta didik dalam pembelajaran mandiri (studi pada program pendidikan kesetaraan paket c di PKBM Geger Sunten Lembang) [Universitas Pendidikan Indonesia]. In *Repository UPI*. https://repository.upi.edu/28941/