INTENSIF, Vol.7 No.1 February 2023
ISSN: 2580-409X (Print) / 2549-6824 (Online)
DOI: https://doi.org/10.29407/intensif.v7i1.18881

The Effect of Integrated Learning Management Systems FLearn in Improving Learning Outcomes at Universities during Online Learning

Received:
26 October 2022
Accepted:
2 January 2022
Published:
10 February 2023

[1]Herry Sanoto, [2*]Dani Kusuma, [3]Mila Chrismawati Paseleng
[1-3]Fakultas Keguruan dan Ilmu Pendidikan, Universitas Kristen Satya Wacana
E-mail: [1]herry.sanoto@uksw.edu, [2]dani.kusuma@uksw.edu, [3]mila.paseleng@uksw.edu
*Corresponding Author

Abstract— The problem in learning during the covid-19 pandemic is how the university implements effective online learning for students. In order to facilitate online learning to be more comprehensive and integrated, the development of an integrated learning system, namely the learning system in Flexibel Learning or Leaning management, is expected to increase the effectiveness of online learning. The research method in this study is a mixed-method research method with a sequential exploratory model. The research begins with a qualitative study to find the root of the problem and then continues with quantitative analysis to find the influence between variables. The study subjects were fourth-year students in the mathematics education study program. The study results show that the integration of the system facilitates the implementation of learning in the online learning process, but there are still obstacles, such as internet access and learning devices. In contrast, the regression test results show a significant influence between the integration of the learning system on student learning outcomes. The influence of learning system integration on learning achievement is 61.3%, and 38.7% is affected by other factors such as motivation, learning independence, student responsibility, and adequate internet access.

Keywords— Independent Learning; Learning Management; Online Learning

Corresponding Author:

Dani Kusuma,
Fakultas Keguruan dan Ilmu Pendidikan,
Universitas Kristen Satya Wacana,
Email: dani.kusuma@uksw.edu

INTENSIF, Vol.7 No.1 February 2023
ISSN: 2580-409X (Print) / 2549-6824 (Online)
DOI: https://doi.org/10.29407/intensif.v7i1.18881

I. INTRODUCTION

Education during the COVID-19 pandemic has undergone many changes, ranging from changes in the learning system from face-to-face to online learning, then changes from print-based face-to-face learning materials to digital-based learning materials, both e-books and videos [1]. The COVID-19 pandemic has indirectly forced a sweeping change, especially in education. Educators, as the main actors of education, require adaptation and updating abilities in the face of change [2]. Changes in the world of education, especially during the COVID-19 pandemic, are primarily focused on the digitalization of education, namely changes in learning schemes, assignments, and assessment schemes. The learning process that turns into online learning automatically requires an application as a learning medium [3], [4]. Applications such as zoom and google meet as face-to-face learning media, LMS (Learning Management System), or modules as a means of discussion, assignment, and sharing of learning materials.

Implementing several online-based learning systems in the era of the covid-19 pandemic is a must for every educational institution, from basic to higher education. The complexity of the system used in each level of education is different because it adapts to the needs of learning outcomes [5], [6]. In addition, the ability of teachers and students affects learning achievement during the online learning system. Primary education uses learning media that are simple and easy to understand by teachers, students, and parents. Several studies have stated that at the basic education level, many use communication media such as WhatsApp, which combines several Google features to facilitate learning [7], [8]. Meanwhile, at higher education levels, such as universities, several learning applications are more complicated with several learning applications such as LMS, zoom, google meet, google classroom, google Apps, and several learning applications developed independently by the university.

The COVID-19 pandemic is the starting point for learning changes from three aspects: the media, teachers, and students who are indirectly required to adapt to conditions [9]–[11]. The readiness of educational institutions to deal with online learning during the COVID-19 pandemic is a differentiator in the expected quality of learning. In addition to readiness in the technical aspect, readiness is also needed in terms of teachers who can operate learning media that have been prepared so that they are effectively carried out in the learning process [12]–[14]. After the technical aspect, teachers who can apply the principles of online learning only direct students to adapt to the online learning system. At the beginning of the application of online learning, there were many obstacles, from media readiness, the readiness of communication networks such as the internet, the readiness of learning devices, teacher readiness in preparing learning modules, and student readiness in learning [15], [16]. Constraints arise because the time required to adapt

ISSN: 2580-409X (Print) / 2549-6824 (Online)
DOI: https://doi.org/10.29407/intensif.v7i1.18881

the online learning model is short and implemented because it is the last solution so that the educational process will continue. However, the longer the implementation of online learning experiences gradual habituation and improvement, so both teachers and students can adjust. Adjustments run dynamically from the learning devices used, teachers, and students. In addition, the implemented learning instruments underwent adjustments and refinements to be suitable for lecture activities.

Higher education levels, such as universities, which support more complex learning systems, use an integrated online learning system so that the learning process is interrelated, making it easier to manage from the aspects of teachers, students, and assessments [17], [18]. The system used is the Integrated Learning Management System, which is a system that accommodates several online learning features from asynchronous and synchronous learning processes facilitated by video conferencing, learning with LMS, online attendance, online tests, online discussions, and book borrowing. in the form of an e-book) online. In particular, the integration of the online learning process has been carried out at the Satya Wacana Christian University Salatiga, with a system known as SIASAT (Satya Wacana Academic Information System) for schedules, attendance, grades, and evaluation of learning; then FLearn (Flexible Learning) for the online learning process as a medium for assignments, material sharing, and discussions; and there is an e-library for borrowing books in both digital and print form. The system used in the online learning process was developed long before the COVID-19 pandemic hit, so the readiness of universities and lecturers is quite good. The obstacle that arises is the readiness of students to familiarize learning which is fully carried out online with the system. The system developed at Satya Wacana Christian University is a combination of several systems that are integrated or integrated. Integrated system is a series of processes to connect several computerized systems and application software, both physically and functionally [19].

Based on the studies described above, this study aims to analyze the effect of the Integrated Learning Management System on student learning outcomes. So that it is known how big the impact on learning achievement is and other aspects that influence each other can be learned.

II. RESEARCH METHOD

The research method used in this study is a mixed method research method with a Sequential Exploratory design. A combination research method combines quantitative and qualitative research methods sequentially, wherein in the first stage, the research is carried out using quantitative methods, and in the second stage is carried out using qualitative methods [20]. Qualitative research to find out the fundamental problems related to the learning process at Satya Wacana Christian University and then proceeds with quantitative analysis to determine the effect

INTENSIF, Vol.7 No.1 February 2023
ISSN: 2580-409X (Print) / 2549-6824 (Online)
DOI: https://doi.org/10.29407/intensif.v7i1.18881

of the learning management system. The findings in the study are expected to contribute to the utilization and impact of the implementation of system integration in improving learning outcomes at the university level. The stages of the research are shown in Figure 1 as follows.

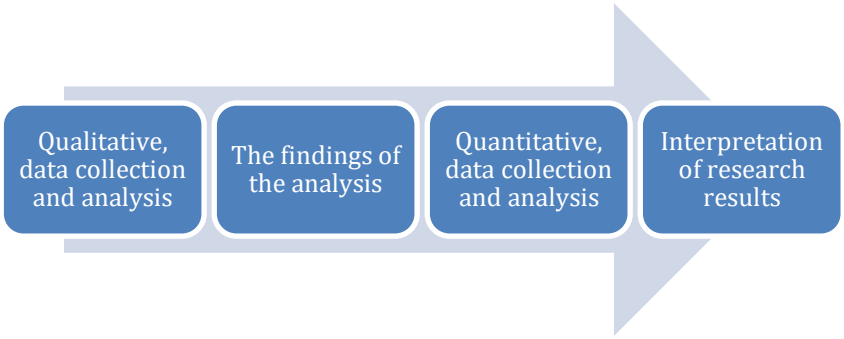

Figure 1. RESEARCH STAGES

The subjects in this study were lecturers and students of Satya Wacana Christian University Mathematics Education Semester 4, consisting of 2 lecturers and 24 students. The instruments used in this study consisted of observation guidelines, interviews, and questionnaires. Data analysis in the study consisted of qualitative analysis to determine the implementation of online learning, followed by quantitative analysis with an effect test (regression). Data triangulation was carried out to obtain valid research data from observations, interviews, and questionnaires to obtain saturated data.

III. RESULT AND DISCUSSION

A. Implementation of Online learning

Learning at the Satya Wacana Christian University during the COVID-19 pandemic was online. The implementation of online learning is due to the high transmission level of Covid-19, so it is impossible for learning to be carried out face-to-face. Before the COVID-19 pandemic, Satya Wacana Christian University had developed an online learning system called Flearn or Flexible Learning. Flearn is a learning website based on the Moodle system so that the learning process can be carried out in two directions, both teachers and students, by utilizing several features of Flearn. Flearn, during the covid-19 pandemic, is the central part of learning that is carried out asynchronously, while the synchronous learning process is carried out using zoom or google meet. The learning system is synchronized by integrating the learning system through Flearn, learning video conferences, and learning attendance. Integrating the three systems makes learning easier for students and teachers to prepare learning materials. Here is a view from Flearn.

ISSN: 2580-409X (Print) / 2549-6824 (Online)
DOI: https://doi.org/10.29407/intensif.v7i1.18881

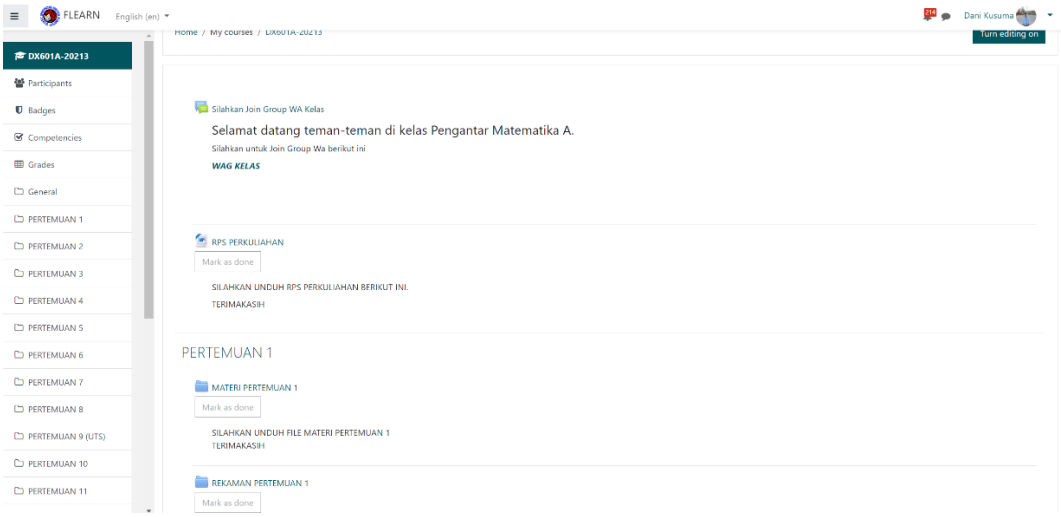

Figure 2. DISPLAY THE LEARNING PROCESS IN FLEARN

Figure 1 shows the learning process using Flearn, which students access. The content in Flearn is in the form of learning materials that lecturers will give to students, including modules, videos, and evaluation of the lecture process through tests. University implementing a learning management system through Flearn aims to accommodate the learning process so that the learning process carried out by students can be monitored. Through Flearn students can download materials, do assignments, discuss, and take exams. The learning flow developed consists of the learning process in Flearn and synchronous learning via zoom or google meet. Teachers must design online learning schemes that direct students to follow the learning flow so that learning is more focused. The following is an example of implementing synchronous learning via zoom.

Figure 3. LEARNING THROUGH ZOOM

INTENSIF, Vol.7 No.1 February 2023
ISSN: 2580-409X (Print) / 2549-6824 (Online)
DOI: https://doi.org/10.29407/intensif.v7i1.18881

Figure 3 shows the lecture process carried out online using zoom media. The online learning process is part of the lecture process, in addition to the lecture process carried out by independent learning through Flearn. So that the learning process carried out is a combination of synchronous and asynchronous.

In addition to the learning process carried out with a combination of synchronous and asynchronous, the integration of the learning process is combined with the evaluation process. Learning evaluation is carried out by evaluating the teacher's implementation of learning so that it becomes a reference for improvement in the implementation of the next lesson. The evaluation includes lesson planning, learning implementation, and learning assessment which are described in several assessment items. The following is a display of the evaluation results from the teacher.

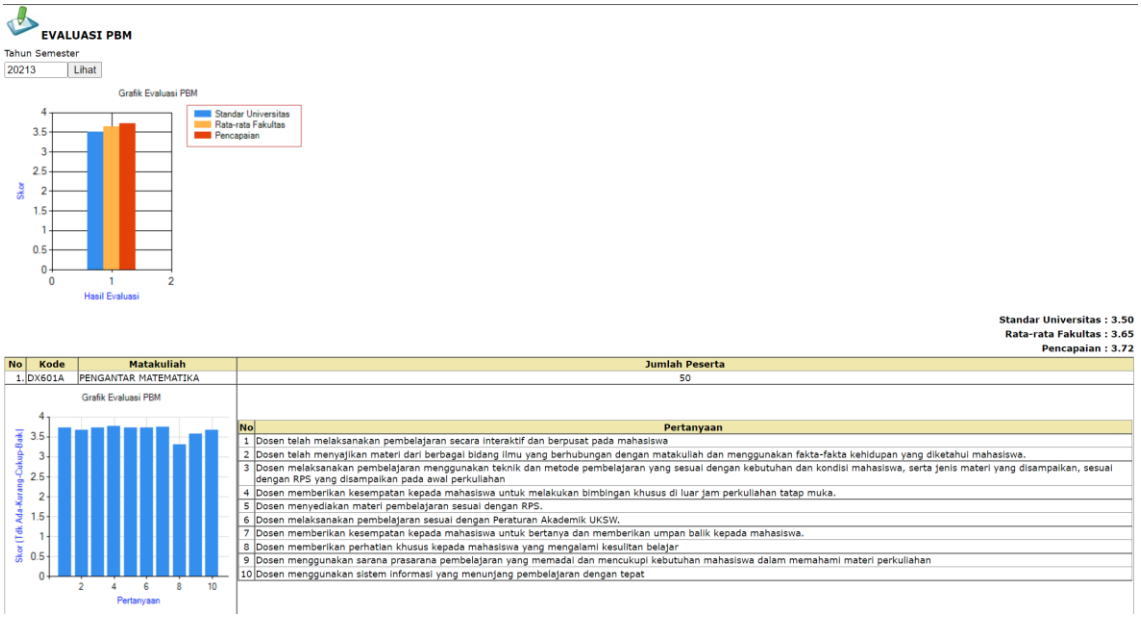

Figure 4. LECTURER EVALUATION RESULT DISPLAY

Figure 4 shows the achievements of the lecturers' evaluation results after carrying out the learning process for one semester in each of the subjects taught. Students have the right to provide evaluations related to the implementation of learning that has passed for one semester. The results of the evaluation of the learning process will be the basis for carrying out the learning process in the following semester.

Based on the results of interviews with teachers, that online learning is exciting and will become one of the forms of future learning, even after the covid-19 pandemic ends. Although the process requires excellent and systematic preparation of the learning process's planning, implementation, and evaluation. In addition, the ability to master technology teachers and

ISSN: 2580-409X (Print) / 2549-6824 (Online)
DOI: https://doi.org/10.29407/intensif.v7i1.18881

students must be adequate to make the learning process smooth and effective. The learning synchronization at Satya Wacana Christian University facilitates the learning process.

Integration between systems in the learning process at Satya Wacana Christian University simplifies and expedites the learning process. However, other obstacles affect the ongoing learning process, namely network access and the completeness of learning tools owned by students. Not all students have good internet access, so the learning process, especially during synchronous times, depends on adequate internet access. Weaknesses in the network aspect are overcome by using the learning feature through Flearn, and students are given access to review the learning recordings that have been carried out.

B. The Effect of Learning System Integration on Student Learning Outcomes

The Effect of Learning System Integration on Student Learning Outcomes was measured using a linear regression test using statistical testing. The test was carried out between the independent variables, namely the learning system integration obtained from the questionnaire results. Then the dependent variable is the achievement of learning outcomes obtained from test results in introductory mathematics courses. Before carrying out the regression test, a prerequisite test was carried out, namely the normality test of data from questionnaire data and learning achievement data. The test hypothesis in the data normality test is as follows.

Table 1. THE HYPOTHESIS OF DATA NORMALITY TEST

Hypothesis	Description
H0:	Data is normally distributed
H1:	Data is not normally distributed

Table 1 shows the provisions in the acceptance of research hypotheses, namely H0 and H1. The test decision in the data normality test is if the value of sig. On Kolmogorov-Smirnov, more than 5% means accepting H0 and rejecting H1 or vice versa. Tabel 1 m

Table 2. DATA NORMALITY TEST OUTPUT

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	***df***	***Sig.***	***Statistic***	***df***	***Sig.***
questionnaire	.124	25	.200*	.946	25	.200
learning achievement	.169	25	.063	.939	25	.143

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

INTENSIF, Vol.7 No.1 February 2023
ISSN: 2580-409X (Print) / 2549-6824 (Online)
DOI: https://doi.org/10.29407/intensif.v7i1.18881

Table 2 shows the results of the normality test of the data obtained in the Kolmogorov-Smirnov test with values of 0.200 for the questionnaire and 0.63 for learning achievement, which means more than 5%. So based on the results of normality testing, it can be concluded that the data is normally distributed.

The normality test results showed that the data met the prerequisite criteria in the linear regression test. The test hypothesis in the linear regression test is as follows.

Table 3. REGRESSION TEST HYPOTHESIS

Hypothesis	Description
H0:	There is no effect of learning system integration (X) on student learning achievement (Y)
H1:	There is an effect of learning system integration (X) on student learning achievement (Y)

Table 3 shows the criteria for the regression test hypothesis which consists of H0 and H1. The test decision in the linear regression test is if the value of sig. On the Coefficients of the questionnaire, more than 5% means accepting H0 and rejecting H1, or vice versa.

Table 4. REGRESSION TEST COEFFICIENTS OUTPUT

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	***Std. Error***	***Beta***	***t***	***Sig.***
1	**(Constant)**	7.480	11.862		.631	.535
	questionnaire	.908	.149	.786	6.090	.000

a. Dependent Variable: learning achievement

Table 4 on regression test coefficients output shows that the output results on the value of Coefficients Sig. the questionnaire is 0.00, which means less than 5%, so reject H0 and accept H1. The conclusion from the regression test results is that there is an influence between the integration of the learning system on student learning outcomes. Based on the table, it is obtained that the regression equation $Y = 7480 + 0.908X$, which means that each addition of one point in the Learning Process Integration questionnaire will increase student learning outcomes by 0.908.

The influence of the independent variable on the dependent variable is deepened in the Model Summary table as follows.

ISSN: 2580-409X (Print) / 2549-6824 (Online)
DOI: https://doi.org/10.29407/intensif.v7i1.18881

Table 5. SUMMARY REGRESSION TEST MODEL OUTPUT

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.786[a]	.617	.601	5.937

a. Predictors: (Constant), questionnaire
b. Dependent Variable: learning achievement

Table 5 the output of the Summary Model results shows the R Square column at a value of 0.617 or 61.7% of the effect of learning system integration on student learning outcomes. While there are 38.3% influenced by other factors. The regression test results show that the integration of the learning process has an effect of 61.7%, which means that it significantly impacts the achievement of student learning outcomes. However, several other factors still affect learning outcomes, such as learning motivation.

Research Purarjomandlangrudi states that easy access to learning materials helps implement learning, especially in online learning [21]. The results of the study show that in the online learning process, integration between systems in the learning process plays a central role in building a conducive learning environment. Integrating the learning system makes it easier for students and lecturers to receive and deliver lectures. Through an interconnected system, students find it easier to find class schedules, assignments, and bills from the learning process. In addition to the learning process, system integration plays a role in evaluating the learning process carried out by lecturers so that students have the right to evaluate the implementation of learning [22], [23].

Apart from the student aspect, the integration of the learning system makes it easy for teachers to share learning materials and materials [24], [25]. So that in the assessment process, the lecture process that has been carried out can be done by collaborating on the results of student attendance, assignments, and exams [26]. The role of the learning system in the online learning process is a significant aspect of smooth learning [27]. Study Gul Olcek states that a system that is easily accessible and easy to use is one aspect of the effectiveness of online learning, in addition to the influence of the availability of the internet network and the computer equipment used [28]–[30].

The completeness of the learning system that has been designed does not fully have a direct impact on the achievement of student learning outcomes. The regression test results showed that the influence of learning system integration had an effect of 61.7%, which means that the direct impact is quite significant. However, there are still several factors that influence student learning outcomes. Online learning is directly influenced by two main aspects: adequate tools and learning motivation [2], [31], [32]. Other factors include easy internet access, learning tools, and student motivation. In addition, the online learning process requires high learning independence because

ISSN: 2580-409X (Print) / 2549-6824 (Online)
DOI: https://doi.org/10.29407/intensif.v7i1.18881

the role of the teacher in the learning process cannot directly supervise but rather provides learning direction [33]–[35]. Moreover, at the level of higher education, such as universities, independence, and responsibility for the achievement of learning outcomes are needed by each student [36], [37].

Obstacles in online learning have a psychological effect on students' declining interest in learning and low responsibility for learning obligations. Collaborative learning in groups and discussions between students cannot be done effectively only through online learning. Learning interactions in higher education are needed to create a participatory and effective learning environment. Online learning rooms have not completely replaced the face-to-face learning interaction process, but they are still an alternative [38]–[40].

The study results indicate several aspects that affect student learning achievement, including student motivation, learning independence, student responsibility, lack of student discussion space, and access to a good internet network and computer equipment.

IV. CONCLUSION

Implementing online learning has several obstacles, including adequate internet access and implementing learning that is still less effective. However, the integration of learning systems that make it easier for students and teachers helps to facilitate access to learning from the planning, implementation, and evaluation stages. Learning System Integration has a significant influence on student learning outcomes. The effect of system integration on student learning achievement reached 61.7%. There are still 38.3% of other influencing factors, such as motivation, independence, and adequate access to learning. In general, integrating learning systems helps acquire student learning outcomes because it facilitates access to learning from students and teachers/lecturers. Achievement in research shows that integrating the learning system makes it easier for lecturers and students to access information. In addition, several previous related studies strengthen research findings that integrating the learning components makes learning more effective and efficient.

REFERENCES

[1] B. B. Lockee, “Online education in the post-COVID era,” Nat. Electron., vol. 4, no. 1, pp. 5–6, 2021, doi: 10.1038/s41928-020-00534-0.

[2] A. M. Sindiani et al., “Distance education during the COVID-19 outbreak: A cross-sectional study among medical students in North of Jordan,” Ann. Med. Surg., vol. 59, pp. 186–194, 2020, doi: 10.1016/j.amsu.2020.09.036.

[3] M. H. Assidiqi and W. Sumarni, “Pemanfaatan Platform Digital di Masa Pandemi Covid-19,” Pros. Semin. Nas. Pascasarj., pp. 298–303, 2020, [Online]. Available: https://proceeding.unnes.ac.id/index.php/snpasca/article/download/601/519

[4] H. Sanoto, M. C. Paseleng, and D. Kusuma, "The Effectiveness of Si Sagu (Teacher Academic Supervision System) in Academic Supervision Process for Teachers at 3T Area," vol. 3, no. 4, pp. 548–553, 2022, doi: 10.46843/jiecr.v3i4.157.

[5] M. A. R. A. Kader, N. N. A. Aziz, S. M. Zaki, M. Ishak, and S. F. Hazudin, "The Effect of Technostress On Online Learning Behaviour Among Undergraduates," Malaysian J. Learn. Instr., vol. 19, no. 1, pp. 183–211, 2022, [Online]. Available: http://e-journal.uum.edu.my/index.php/mjli%0AHow

[6] R. C. Chick et al., "Using Technology to Maintain the Education of Residents During the COVID-19 Pandemic," J. Surg. Educ., vol. 77, no. 4, pp. 729–732, 2020, doi: 10.1016/j.jsurg.2020.03.018.

[7] X. Feng, N. Ioan, and Y. Li, "Comparison of the effect of online teaching during COVID-19 and pre-pandemic traditional teaching in compulsory education," J. Educ. Res., vol. 114, no. 4, pp. 307–316, 2021, doi: 10.1080/00220671.2021.1930986.

[8] N. Cavus and M. M. Al-Momani, "Mobile system for flexible education," Procedia Comput. Sci., vol. 3, no. December, pp. 1475–1479, 2011, doi: 10.1016/j.procs.2011.01.034.

[9] H. Rheem, D. Vaughn Becker, and S. D. Craig, "Assessing learning effort with hand motion tracking methods," Appl. Cogn. Psychol., vol. 35, no. 3, pp. 606–620, 2021, doi: 10.1002/acp.3784.

[10] H. Sanoto, "Analisis Faktor yang Mempengaruhi Manajemen Supervisi Akademik selama Pandemi COVID-19 di Kalimantan Barat," J. Basicedu, vol. 5, no. 3, pp. 1169–1174, 2021, doi: 10.31004/basicedu.v5i3.858.

[11] Y. M. Tang et al., "Comparative analysis of Student's live online learning readiness during the coronavirus (COVID-19) pandemic in the higher education sector," Comput. Educ., vol. 168, no. November 2020, 2021, doi: 10.1016/j.compedu.2021.104211.

[12] L. Vinet and A. Zhedanov, "A 'missing' family of classical orthogonal polynomials," J. Phys. A Math. Theor., vol. 44, no. 8, pp. 1689–1699, 2011, doi: 10.1088/1751-8113/44/8/085201.

[13] V. J. García-Morales, A. Garrido-Moreno, and R. Martín-Rojas, "The Transformation of Higher Education After the COVID Disruption: Emerging Challenges in an Online Learning Scenario," Front. Psychol., vol. 12, no. February, pp. 1–6, 2021, doi: 10.3389/fpsyg.2021.616059.

[14] L. S. Neuwirth, S. Jović, and B. R. Mukherji, "Reimagining higher education during and post-COVID-19: Challenges and opportunities," J. Adult Contin. Educ., vol. 27, no. 2, pp. 141–156, 2021, doi: 10.1177/1477971420947738.

[15] A. Anugrahana, "Hambatan, Solusi dan Harapan: Pembelajaran Daring Selama Masa Pandemi Covid-19 Oleh Guru Sekolah Dasar," Sch. J. Pendidik. dan Kebud., vol. 10, no. 3, pp. 282–289, 2020, doi: 10.24246/j.js.2020.v10.i3.p282-289.

[16] D. S. Bestiantono, P. Z. R. Agustina, and T.-H. Cheng, "How Students' Perspectives about Online Learning Amid the COVID-19 Pandemic?," Stud. Learn. Teach., vol. 1, no. 3, pp. 133–139, 2020, doi: 10.46627/silet.v1i3.46.

[17] D. Turnbull, R. Chugh, and J. Luck, "Transitioning to E-Learning during the COVID-19 pandemic: How have Higher Education Institutions responded to the challenge?," Educ. Inf. Technol., vol. 26, no. 5, pp. 6401–6419, 2021, doi: 10.1007/s10639-021-10633-w.

[18] H. de Boer, "COVID-19 in Dutch higher education," Stud. High. Educ., vol. 46, no. 1, pp. 96–106, 2021, doi: 10.1080/03075079.2020.1859684.

[19] Y. Xie and D. Reider, "Integration of Innovative Technologies for Enhancing Students' Motivation for Science Learning and Career," J. Sci. Educ. Technol., vol. 23, no. 3, pp. 370–380, 2014, doi: 10.1007/s10956-013-9469-1.

[20] Sugiyono, "Metodologi Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif dan R&D, (Bandung: Alfabeta, 2008)," pp. 335–336, 2008.

[21] A. Purarjomandlangrudi, D. Chen, and A. Nguyen, "Investigating the drivers of student interaction and engagement in online courses: A study of state-of-the-art," Informatics Educ., vol. 15, no. 2, pp. 269–286, 2016, doi: 10.15388/infedu.2016.14.

[22] Y. Ramdani, W. H. S. W. Mohamed, and N. K. Syam, "E-learning and academic performance during covid-19: The case of teaching integral calculus," Int. J. Educ. Pract., vol. 9, no. 2, pp. 424–439, 2021, doi: 10.18488/journal.61.2021.92.424.439.

[23] W. Kidd and J. Murray, "The Covid-19 pandemic and its effects on teacher education in England: how teacher educators moved practicum learning online," Eur. J. Teach. Educ., vol. 43, no. 4, pp. 542–558, 2020, doi: 10.1080/02619768.2020.1820480.

[24] H. Nisa, A. Permana, and R. Firmansyah, "Peranan Smarthphone Dalam Dunia Pendidikan Di Masa Pandemi Covid-19," Temat. J. Teknol. Inf. Dan Komun., vol. 7, no. 2, pp. 140–146, 2020.

[25] A. M. Maatuk, E. K. Elberkawi, S. Aljawarneh, H. Rashaideh, and H. Alharbi, "The COVID-19 pandemic and E-learning: challenges and opportunities from the perspective of students and instructors," J. Comput. High. Educ., vol. 34, no. 1, pp. 21–38, 2022, doi: 10.1007/s12528-021-09274-2.

[26] M. A. Setiawan, F. Fakhruddin, and K. Kardoyo, "The Service Quality Influence and The School Facilities to The Students' Satisfaction Through The School Reputation As The Intervening Variable," Education Management, vol. 9, no. 2. pp. 182–190, 2020.

[27] I. Mustapha, N. T. Van, M. Shahverdi, M. I. Qureshi, and N. Khan, "Effectiveness of Digital Technology in Education During COVID-19 Pandemic. A Bibliometric Analysis," Int. J. Interact. Mob. Technol., vol. 15, no. 8, pp. 136–154, 2021, doi: 10.3991/ijim.v15i08.20415.

[28] G. Olcek, I. Celik, and Y. Basoglu, "The impact of the COVID-19 pandemic on Audiology students in Turkey: E-learning, Knowledge of Teleaudiology, Psychological and Social Status and Personal Development," Turkish Online J. Distance Educ., vol. 23, no. 1, pp. 19–42, 2022, doi: 10.17718/tojde.1050339.

[29] H. Sanoto, "Online Learning Management in The Covid-19 Pandemic Era," JETL (Journal Educ. Teach. Learn., vol. 6, no. 1, p. 47, 2021, doi: 10.26737/jetl.v6i1.2358.

[30] M. P. A. Murphy, "COVID-19 and emergency eLearning: Consequences of the securitization of higher education for post-pandemic pedagogy," Contemp. Secur. Policy, vol. 41, no. 3, pp. 492–505, 2020, doi: 10.1080/13523260.2020.1761749.

[31] B. L. Moorhouse, "Adaptations to a face-to-face initial teacher education course 'forced' online due to the COVID-19 pandemic," J. Educ. Teach., vol. 00, no. 00, pp. 609–611, 2020, doi: 10.1080/02607476.2020.1755205.

[32] L. P. Dinh and T. T. Nguyen, "Pandemic, social distancing, and social work education: students' satisfaction with online education in Vietnam," Soc. Work Educ., vol. 39, no. 8, pp. 1074–1083, 2020, doi: 10.1080/02615479.2020.1823365.

[33] J. Dalle, S. Hadi, Baharuddin, and N. Hayati, "The development of interactive multimedia learning pyramid and prism for junior high school using macromedia authorware," Turkish Online J. Educ. Technol., vol. 2017, no. Special Issue 2017, pp. 714–721, 2017.

[34] J. Code, R. Ralph, and K. Forde, "Pandemic designs for the future: perspectives of technology education teachers during COVID-19," Inf. Learn. Sci., vol. 121, no. 5–6, pp. 409–421, 2020, doi: 10.1108/ILS-04-2020-0112.

[35] T. Crick, C. Knight, R. Watermeyer, and J. Goodall, "The impact of COVID-19 and 'Emergency Remote Teaching' on the UK computer science education community," ACM Int. Conf. Proceeding Ser., pp. 31–37, 2020, doi: 10.1145/3416465.3416472.

[36] N. Rokhman, S. B. Waluya, and Rochmad, "Individuals development of the metacognitive thinking skills on solving math word problems," J. Phys. Conf. Ser., vol. 1321, no. 2, 2019, doi: 10.1088/1742-6596/1321/2/022103.

ISSN: 2580-409X (Print) / 2549-6824 (Online)
DOI: https://doi.org/10.29407/intensif.v7i1.18881

[37] S. Sukendro et al., "Using an extended Technology Acceptance Model to understand students' use of e-learning during Covid-19: Indonesian sport science education context," Heliyon, vol. 6, no. 11, p. e05410, 2020, doi: 10.1016/j.heliyon.2020.e05410.

[38] P. Soltani and A. H. P. Morice, "Augmented reality tools for sports education and training," Comput. Educ., vol. 155, p. 103923, 2020, doi: 10.1016/j.compedu.2020.103923.

[39] J. Allen, L. Rowan, and P. Singh, "Teaching and teacher education in the time of COVID-19," Asia-Pacific J. Teach. Educ., vol. 48, no. 3, pp. 233–236, 2020, doi: 10.1080/1359866X.2020.1752051.

[40] A. Joshi, M. Vinay, and P. Bhaskar, "Impact of coronavirus pandemic on the Indian education sector: perspectives of teachers on online teaching and assessments," Interact. Technol. Smart Educ., vol. 18, no. 2, pp. 205–226, 2020, doi: 10.1108/ITSE-06-2020-0087.