IJERLAS
International Journal of Educational Review, Law And Social Sciences

IMPLEMENTATION OF ONLINE LEARNING FOR MEDAN CITY HIGH SCHOOL STUDENTS DURING THE PANDEMIC

Muhammad Sadri[1], Delyana R Pulungan[2]
[1]Social Studies Education Study Program, FKIP, STKIP Al-Maksum
[2]Program Study of Agribusiness, Institut Teknologi Sawit Indonesia
email : delpulungan@itsi.ac.id

ABSTRACT

Although the COVID-19 pandemic has not yet fully recovered, the online learning process must still be carried out as an effort to educate the lives of the nation's generation. The purpose of this study was to examine in more depth the online learning strategies carried out by schools. This research was conducted in the first week to the fourth week of February 2022. The data collection techniques were in the form of observation, interviews, and documentation studies. The researcher serves as the main tool for data collection. The main data collection techniques are through interviews, explanations and documentation. The results showed that there were various online learning strategies carried out by the school, including icebreakers and openers, student expeditions, PCT (Purposive Creative Thinking), P2P (Peer to Peer interaction), streaming experts, and mental gymnastics. This learning strategy is carried out with the hope that it can foster meaningful learning in learning

Keywords***: Learning; e-learning; online learning; pandemic.***

1. INTRODUCTION

Since the Indonesian government confirmed the first incidence of Coronavirus Disease 2019 (Covid-19) in March 2020, Indonesia has been dealing with an unresolved pandemic. As a result of this, nearly all sectors, including the education sector, are paralyzed. As a precaution, the Ministry of Education and Culture (Kemdikbud) has developed a learning from home (LFH) policy in the education sector, particularly for schools located in the yellow, orange, and red zones. During the Covid-19 time, this refers to the Joint Decree of the Minister of Education and Culture, Minister of Religion, Minister of Health, and Minister of Home Affairs on Guidelines for the Implementation of Learning in the 2020/2021 Academic Year. Particularly for educational units located in the green zone, face-to-face learning is permissible with the implementation of health protocols (Husnan Nurjannah, Husnan, Ahmad Helwani, Nurjannah, 2021; Suyeno & Nisa', 2021).

With the Distance Learning (DL) system, Learning from Home (LFH) is established. In article 1 paragraph 15 of Law No. 20 of 2003, it is stated that PJJ is education in which students are separated from teachers and diverse learning materials are utilized through communication technology, information, and other media. Distance learning in the network (online) and distance learning outside the network are the two implementation approaches for PJJ (offline). In adopting PJJ, education units may select a strategy (online, offline, or a combination of both) based on the characteristics, availability, and infrastructure preparedness of their facilities and infrastructure (Husnan Nurjannah, Husnan, Ahmad Helwani, Nurjannah, 2021; Suyeno & Nisa', 2021).

According to the preceding description, one sort of DL is online learning. The online learning system is a system in which teachers and students do not interact face-to-face but rather via the internet. Teachers and students learn simultaneously utilizing applications such as WhatsApp, Telegram, Zoom Meeting, Google Meet, Google Classroom, Quiepper School, and

Teacher's Room, among others (Ade Afni Utari & Hidayatullah, 2019; Asmuni, 2020; Suryadi, 2007).

When students, teachers, and parents have alternate options for utilizing online learning media, there is a difficulty in that some parents do not have mobile devices (Android) or PCs to facilitate online learning, particularly for students. This disorder distorts their perception of reality. On the one hand, there is a lack of supporting infrastructure, while on the other, there is a desire for educational services for students. Article 31 paragraph 1 of the Constitution of 1945 stipulates that every citizen has the right to an education. The problem is not only the lack of learning facilities, but also the absence of a quota (pulse) that requires a fairly high cost to facilitate the needs of online learning. Parents of students from middle- to low-income economic, have low budget to provide internet networks (Husnan Nurjannah, Husnan, Ahmad Helwani, Nurjannah, 2021; Suyeno & Nisa', 2021).

Students living in rural, isolated, and underdeveloped locations have difficulty gaining access to the Internet network, despite the fact that the Internet network is literally at their fingertips. Even if a person uses a cellular network, the network can occasionally unstable due to the location's lack of cellular signal coverage. This is a common issue among students who participate in online learning, reducing the effectiveness of its implementation (Husnan Nurjannah, Husnan, Ahmad Helwani, Nurjannah, 2021; Suyeno & Nisa', 2021).

The fact that teachers and students are unprepared for online learning is also a significant issue. Due to the covid-19 pandemic, the sudden transfer from the traditional learning method to the online system without any preparation. Several teachers are unable to keep up with technological and information-based learning changes. Even while it is a requirement for instructors to use technology to enhance their students' learning, especially during the Covid-19 pandemic, this is not always the case. Even under the conditions of the Covid-19 pandemic, all of this must be completed so that the learning process may continue and the rights of students to receive an education are met (Husnan Nurjannah, Husnan, Ahmad Helwani, Nurjannah, 2021; Suyeno & Nisa', 2021).

Based on the above description, online learning offers an alternative solution for implementing learning during the COVID-19 pandemic; nonetheless, its implementation poses a number of challenges for teachers, students, parents, and educational institutions. Online education can quantitatively contribute to teaching and learning interactions. Although online learning does not involve direct face-to-face interaction, there are more learning encounters in online learning (Elkordy & Keneman, 2018; Samli, 2011; Tortop, 2013; Young & Balli, 2014). There will be interaction between the learner and another learner, the learner and the instructor, the learner and the surroundings, and the learner and the media. This engagement occurs due to the assistance of tools, specifically e-learning, which includes static and dynamic web, discussion groups, e-mail, chat, instant messaging, video streaming, animation, application sharing, and video conferencing. Digital learning can engage students by requiring them to interact actively with computers, engaging in rigorous physical and mental activities such as drag-and-drop, data input, data search, composition of learning materials, and others (Howard et al., 2014; Lawless & Brown, 2015; Veli, 2014).

Adapted from (Bonk & Dennen, 2003), there are numerous online learning strategies that can also be used with learning strategies that lead to meaningful learning. Among these tactics are: First, Ice breaker and Opener are intended to condition students to focus on learning by offering treatment in the form of activity or a small game, so that the learning spirit returns to normal. Student Expedition's second objective is to expose students to a variety of learning obstacles so that they are encouraged to continue studying and reach the greatest learning objectives. Thirdly, PCT (Purposive Creative Thinking) is recognizing learning conflicts or issues and resolving them through discussion forums or chats. Fourth, P2P (Peer-to-Peer interaction) involves the use of cooperative strategies in web-based learning activities. Fifth, Streaming Expert allows users to watch or hear subject matter experts through videos that investigate difficult-to-obtain subject

matter themes. Sixth, Mental Gymnastic requires that students engage in brainstorming exercises, specifically brainstorming that attempts to attain the listed learning objectives.

In addition, several indicators of success are required to support online learning strategies, including: first, the perceived usefulness factor; second, the perceived ease of use factor; third, the intrinsic motivation factor, which is reflected in self-efficacy; and fourth, the extrinsic motivation factor, which is reflected in the subjective norm. The appeal of online learning lies in its look, simplicity of use (user friendly), interaction skills, language, program completion, and ability to keep motivation (Budhianto, 2020).

The purpose of this study was to gain a deeper understanding of how online learning was implemented in numerous Medan City senior high schools. This study aims to determine what tactics schools employ during online learning. In addition, this study tries to identify the characteristics that contribute to the effectiveness of online learning at the school. Teachers, students, schools, parents, and the government are anticipated to use the findings of this study as information and reference material for formulating policies for integrating online learning.

2.METHOD

This research used a qualitative descriptive method. According to Bogdan and Taylor in (Moleong;, 2013), qualitative research is a method of inquiry that produces descriptive data in the form of written or spoken representations of society and observable behavior (Corbin & Strauss, 2014) (Berg, 2009; Boyatzis, 1998; Braun & Clarke, 2006; Creswell, 2007; Patton, 1990). This study aims to examine the emotional development of children by describing tiger parenting with emotion regulation strategies.

From the first to fourth week of February 2022, 5 (five) students (representatives from 5 different high schools/equivalent schools in Medan City) were interviewed for this study (as shown in table 1). To ease the collecting of data and information, the researcher designed a research instrument employing observation, interviews, and documentation studies as data collection methods. The researcher is the primary instrument for data collecting. The primary methods of data collection include interviews, explanations, and documentation. The questions asked of the interviewees were: (1) self-identification; (2) parental occupations; and (3) school use of online learning.

Table 1. Informan Profile

No	Code	Initial	Age	Parent's Occupation
1	A1	MMM	16 y.o	Self-employed
2	A2	TP	16 y.o	Civil Servant
3	A3	HE	17 y.o	Entrepreneur
4	A4	ZN	16 y.o	Private sector employee
5	A5	AH	17 y.o	Honorary

In addition, to help this research, the online learning strategy proposed by Bonk and Dennen (2003) is employed as a research reference; there are six (six) strategies that become references (as indicated in table 2).

Table 2. Online Learning Strategy

No	Strategy Type
1	Ice breaker and Opener
2	Student Expedition
3	PCT (Purposive Creative Thinking
4	P2P (Peer to Peer interaction
5	Streaming Expert
6	Mental Gymnastic

Information on online learning strategies based on the findings of Bonk and Dennen's (2003) research will later serve as the primary resource for gathering data on the implementation of online learning in schools. Using the interactive model of Miles and Hubermen in this study's data analysis technique (Sugiyono, 2014). Data analysis tasks consist of data reduction, data presentation, and conclusion or verification drawing. This research used triangulation. Triangulation of methods and sources is used by examining interview notes, field notes, surveys, and documentation notes from various data sources. As stated by William in (Sugiyono, 2014), the triangulation technique is used to assess data from multiple sources by combining methods and times. Author used this technique to test the validity of the data.

The following is the research flow depicted in Figure 1.

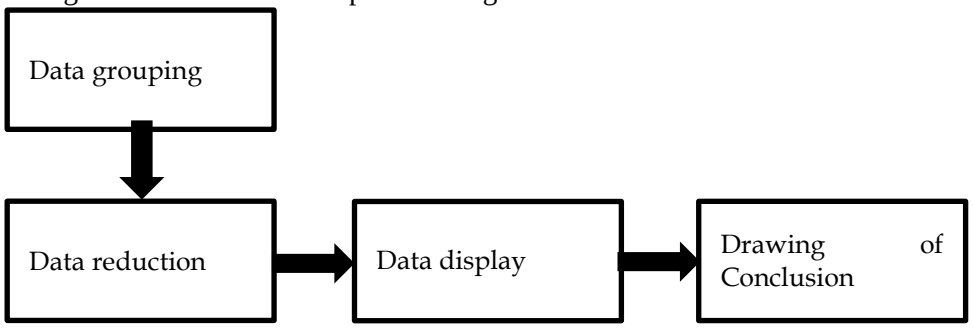


Figure 1. Research flow

3.RESULTS AND DISCUSSION

Online learning is the use of an internet-based interactive model with a Learning Management System (LMS) to facilitate learning. Online learning is a program for organizing online learning programs in order to reach a larger and more diverse target group. Online education is a part of distance education that specifically integrates electronic technology and the internet. ; Samli, 2011; Sasmita et al., 2021; Temel, 2014; Tortop, 2013; Widiastuti, 2013).

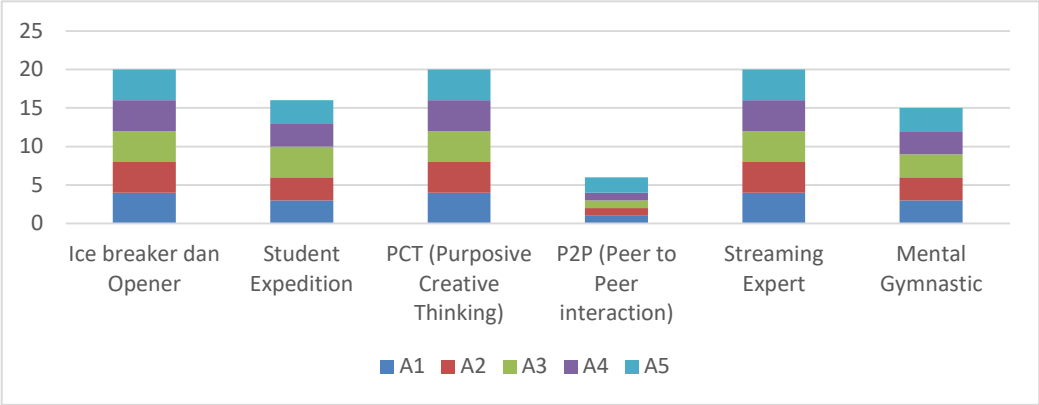
Online education is a necessity for educational institutions. In the midst of the Covid-19 pandemic, this learning approach can serve as a means to maintain teaching and education. During this pandemic, teachers can still teach and students can still study at home. Online learning is equivalent to the usage of internet-based technology characteristics, which rely on the availability of information technology.

Nahumury and Antony's research (2022) found the fact that the online learning process (e-learning) makes the learning process easier and can reach all students from the middle to lower economic group, even though they do not have the tools (computer or cellphone) but they can still do it. face-to-face learning by providing learning modules accompanied by detailed explanations from the teacher and assignments at home so that there are no more limitations in learning even in

pandemic conditions. This learning model is referred to as semi-online learning which is a solution during a pandemic.

3.1.Online Learning Strategies in Schools

Based on the findings of interviews with five (5) students, it is known that 20% of schools (as seen in Figure 2) prefer to employ the ice breaker and opener methods when implementing online learning strategies. This method is chosen by the school because it allows teachers to condition students to focus on learning by offering treatment in the form of action or a small game, thereby restoring the normal spirit of learning. Ice cracking can be applied to all topics, including non-formal education, according to research (May & Sapri, 2022); (Knickle & McNaughton, 2021). Combining ice breaking with a realistic learning model in cooperative settings (Resik) and other learning models is possible. Students' interest in studying, motivation to learn, absorption, and learning outcomes can be increased with the adoption of Ice breaking. A further benefit of ice breaking is that it eliminates dullness, boredom, and tiredness with simple, skill-free activities that anyone can perform.



In addition, based on the findings of interviews with five students, it was determined that 15% of schools (as indicated in Figure 2) chose to adopt the student expedition method when implementing online learning strategies. This method is chosen by the school because it allows teachers to present students with a variety of learning challenges, so motivating students to continue studying and reach the highest learning goals. According to study (Senawati, 2018), the student expedition method or simulation method permits all students to be individually and collectively active and responsible in their learning. The benefit of this simulation method is that all group members must adhere to the assigned task.

Based on the results of following interviews with five students, it was determined that 20% of schools (as showed in Figure 2) used the PCT (Purposive Creative Thinking) method while implementing online learning strategies. This strategy is chosen by the school because it allows teachers to detect and address issues or problems in learning through discussion forums or chats. According to study (Meitiyani et al., 2019), creative ideas can be fostered through problem-solving and challenging real-world (authentic) activities. The outcomes of research pertaining to the use of this strategy are consistent with these findings. This activity necessitates creative and imaginative thinking abilities as well as a multidisciplinary perspective from pupils. In specific cases, these creative thinking skills will incorporate imagination, intelligence, insight, and ideas (Birgili, 2015).

Moreover, based on the findings of following interviews with 5 (five) students, it was determined that 5% of schools (as seen in Figure 2) choose to adopt the P2P (Peer to Peer interaction) method when implementing online learning strategies. This method is chosen by schools because it enables teachers and students to engage in collaborative web-based learning activities. This method has not been entirely successful, however, due to the restricted number of schools with information resources and the obstacles posed by the students themselves.

The application of this method is consistent with research findings (Mawaddah & Puspasari, 2021) that indicate that although many teachers agree that controlling the availability of facilities owned by students must be carried out by teachers for smooth online learning, there are obstacles related to infrastructure indicators obtained from interviews with teachers, such as weather that affects internet signal strength.

Based on the findings of following interviews with 5 (five) students, it is known that 20 percent of schools (as seen in Figure 2) prefer to use the Streaming Expert technique, which consists of seeing or listening to experts through videos that examine themes. specific information that is tough to find in textbooks. This strategy is used by schools because it allows teachers and students to listen to expert and expert commentary on the lesson's topic through videos. Research (Purwono, 2018) reveals that the implementation of the use of audio-visual media in learning has a positive effect on students, that students acquire a new learning environment, that the classroom environment becomes more interactive, that learning becomes interesting, and that students become more active to participate in learning. The implementation of learning with audio-visual media was highly dynamic, students received a new learning environment, student participation in learning was enthusiastic, and students were not easily bored by the learning process.

Muchlis et al. (2022) found that the development of learning methods that are consistent with the concept of e-learning can raise the digital literacy of students to assist their learning. In his research, Ramdani (2020) found that digital-based learning during the Covid-19 pandemic is beneficial since it simultaneously improves students' digital literacy. This states that educators in the 21st century must have access to learning innovations that may be implemented in student education for students to be more involved in enhancing their learning competencies. Educators must be able to give students with chances for active learning and communication through online learning (e-learning) (Hall, 2014; Handayanto, 2015).

Moreover, based on the results of subsequent interviews with 5 (five) students, it was determined that in the application of online learning strategies by the school, 15% (as depicted in Figure 2) of the schools chose to use the Mental Gymnastic method, in which students engaged in brainstorming activities aimed at achieving the outlined learning objectives. The school adopts this strategy because it recognizes that online learning presents multiple challenges, and the brainstorming technique is projected to lower the level of student learning difficulty. The results of this study are consistent with those of previous research (Amin, 2017), which indicates that learning becomes more interesting, students become more engaged in learning activities, and students become more focused when brainstorming is used. Students can also voice their thoughts more freely, thereby demonstrating their ability to do so.

4.CONCLUSION AND SUGGESTION

4.1.CONCLUSION

In conclusion, that the school has made every effort to implement online learning for students. The school, through its teachers, intends to make online learning appealing by focusing on its appearance, ease of use (user friendly), interaction skills, language, program completeness, and capacity to retain motivation, so that students' excitement for learning is maintained properly.

4.2.Suggestion

For this reason, the school requires an online learning strategy, including: First, Ice breaker and Opener are intended to condition students to focus on learning by providing treatment in the form of actions or a small game, so that the learning spirit returns to normal. Student Expedition objective is to expose students to a variety of learning challenges so that they are encouraged to continue studying and reach the highest learning goals. Third, PCT (Purposive Creative Thinking) is recognizing learning conflicts or issues and resolving them through discussion forums or chats. Fourth, PSP (Peer-to-peer interaction) involves the use of cooperative methods in web-based learning activities. Fifth, Streaming Expert allows users to watch or hear subject matter experts

through videos that examine difficult-to-obtain subject themes. Sixth, in Mental Gymnastic, students engage in brainstorming activities, specifically brainstorming designed to attain the specified learning objectives.

REFERENCES

Ade Afni Utari, & Hidayatullah, S. P. (2019). Manfaat ICT Sebagai Media Pembelajaran Di SD Dharmajaya Palembang. Seminar Nasional Pendidikan, 52–57.

Amin, D. (2017). Penerapan Metode Curah Gagasan (Brainstorming) Untuk Meningkatkan Kemampuan Mengemukakan Pendapat Siswa. Jurnal Pendidikan Sejarah, 5(2), 1. https://doi.org/10.21009/jps.052.01

Asmuni, A. (2020). Problematika Pembelajaran Daring di Masa Pandemi Covid-19 dan Solusi Pemecahannya. Jurnal Paedagogy, 7(4), 281. https://doi.org/10.33394/jp.v7i4.2941

Berg, B. (2009). Qualitative Research Methods for the Social Sciences. Bacon.

Birgili, B. (2015). Creative and Critical Thinking Skills in Problem-based Learning Environments. Journal of Gifted Education and Creativity, 2(2), 71–71. https://doi.org/10.18200/jgedc.2015214253

Bonk, C. J., & Dennen, V. (2003). Frameworks for research, design, benchmarks, training, and pedagogy in web-based distance education. Handbook of Distance Education, 331–348. http://books.google.com/books?hl=en&lr=&id=_IqeYfDpWGIC&oi=fnd&pg=PA331&dq=Frameworks+for+Research,+Design,+Benchmarks,+Training+and+Pedagogy+in+Web-Based+Distance+Education&ots=YIQX5u-647&sig=EqTR4dJyMV4J3aYJicyQQRNBVzk

Boyatzis, R. (1998). Transforming Qualitative Information, Thematic Analysis and Code Development. Sage Publications.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3. https://doi.org/10.1191/1478088706qp063oa

Budhianto, B. (2020). Analisis Perkembangan dan Faktor yang Mempengaruhi Keberhasilan Pembelajaran Daring (e-learning). Jurnal AgriWidya, 1(1), 11–29.

Corbin, J., & Strauss, A. (2014). Basics of qualitative research: Techniques and procedures for developing grounded theory: Vol. null (4th ed. (ed.)).

Creswell, J. (2007). Research Design: Qualitative, Quantitative and Mixed Methods Approaches. Sage Publications.

Cullinan, J., Flannery, D., Harold, J., Lyons, S., & Palcic, D. (2021). The disconnected: COVID-19 and disparities in access to quality broadband for higher education students. International Journal of Educational Technology in Higher Education, 18(1), 1–21. https://doi.org/10.1186/s41239-021-00262-1

Elkordy, A., & Keneman, A. (2018). Leading Forward by Learning-Sciences Informed Design: Iste Technology Competencies and Teacher Educator Learning. In INTED Proceedings. IATED. https://doi.org/10.21125/inted.2018.1293

Hall, R., Atkins, L., & Fraser. (2014). Research article: Defining a self-evaluation digital literacy framework for secondary educators: The DigiLit Leicester project. Research in Learning Technology, 22(3), 1-3

Handayanto, et.al. (2015). Pembelajaran E-Learning Menggunakan Moodle pada Matakuliah Metode Numerik. Jurnal Informatika UPGRIS, 1(6), 47.

Howard, L. W., Tang, T. L.-P., & Jill Austin, M. (2014). Teaching Critical Thinking Skills: Ability, Motivation, Intervention, and the Pygmalion Effect. Journal of Business Ethics, 128(1), 133–147. https://doi.org/10.1007/s10551-014-2084-0

Husnan Nurjannah, Husnan, Ahmad Helwani, Nurjannah, A. H. (2021). Implementasi Proses Pembelajaran Pasca Surat Edaran Nomer 15 Tahun 2020 tentang Pedoman Pembelajaran dari Rumah dalam Masa Darurat Pandemi Covid-19. Ibtida'iy : Jurnal Prodi PGMI, 6(2), 10. https://doi.org/10.31764/ibtidaiy.v6i2.6298

Knickle, K., & McNaughton, N. (2021). Who do I think you are? The guessing game ice breaker: Building community. Medical Teacher, 43(11), 1330–1332. https://doi.org/10.1080/0142159X.2021.1959025

Lawless, K. A., & Brown, S. W. (2015). Developing scientific literacy skills through interdisciplinary, technology-based global simulations: GlobalEd 2. The Curriculum Journal, 26(2), 268–289. https://doi.org/10.1080/09585176.2015.1009133

Mawaddah, S. A., & Puspasari, D. (2021). Hambatan Guru pada Saat Melakukan Pembelajaran Daring Selama Work From Home (WFH) di SMKN 1 Sooko Mojokerto. Jurnal Edukasi, 8(2), 1–10. https://jurnal.unej.ac.id/index.php/JEUJ/article/view/26826

May, M. H., & Sapri, S. (2022). Implementasi dan Manfaat Ice breaking untuk Meningkatkan Minat Belajar Siswa Sekolah Dasar. Jurnal Basicedu, 6(1), 1324–1330.

Meitiyani, M., Nadhiro, N., & Syaban, A. (2019). Membangun Kemampuan Berpikir Kreatif Untuk Mengatasi Masalah Lingkungan Dengan Menggunakan Pembelajaran Otentik. Edusains, 11(2), 297–302. https://doi.org/10.15408/es.v11i2.13066

Moleong;, L. J. (2013). Metode Penelitian Kualitatif. PT Remaja Rosdakarya.

Muchlis, M., Gunawan, G., Irwansyah, M., Perkasa, M., & Suryani, E. (2022). Development of Islamic Education Learning Tools Based on E-Learning to Enhance Students Digital Literacy. Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran, 8(2), 500-507. doi:https://doi.org/10.33394/jk.v8i2.4433

Nahumury, A., & Antony, R. (2022). Semi-Online Learning as a Solution to the Digital Divide in Education in Frontier, Outermost, and Disadvantaged Regions (3T).Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran, 8(2), 331-340. doi:https://doi.org/10.33394/jk.v8i2.4960

Patton, M. (1990). Qualitative Research and Evaluation Methods. Sage Publications.

Purwono, J. dkk. (2018). Penggunaan Media Audio-Visual pada Mata Pelajaran Ilmu Pengetahuan Alam di Sekolah Menengah Pertama Negeri 1 Pacitan. Jurnal Teknologi Pendidikan Dan Pembelajaran, 2(2), 127–144.

Ramdani, A., Jufri, W., & Jamaluddin. (2020). Pengembangan Media Pembelajaran Berbasis Android pada Masa Pandemi Covid-19 untuk Meningkatkan Literasi Sains Peserta Didik. Jurnal Kependidikan, 6(3), 43

Samli, A. C. (2011). Principles of Developing a New Product Strategy. In From Imagination to Innovation (pp. 73–78). Springer New York. https://doi.org/10.1007/978-1-4614-0854-3_11

Sasmita, F. A., Swartika, F., Hasan, M., & Arisah, N. (2021). Inovasi Pembelajaran Perguruan Tinggi Dimasa Pandemi Covid 19. Implementasi Merdeka Belajar Di Masa Pandemi Covid-19: Peluang Dan Tantangan, 328–335.

Senawati, S. (2018). Penerapan Metode Simulasi untuk Meningkatkan Prestasi Belajar Siswa pada Mata Pelajaran PKn Di Kelas IV SD Negeri 12 Kepahiang. Jurnal PGSD, 11(1), 83–90. https://doi.org/10.33369/pgsd.11.1.83-90

Sugiyono. (2014). Metode Penelitian Kuantitatif, Kualtatif, dan R&D. Alfabeta.

Suryadi, A. (2007). Pemanfaatan ICT dalam Pembelajaran. Pendidikan Terbuka Dan Jarak Jauh, 8(1), 6.

Suyeno, S., & Nisa', I. K. (2021). Manifestasi Kebijakan Kemendikbud Nomor 4 Tahun 2020 Tentang Pelaksanaan Kebijakan Pendidikan dalam Masa Darurat Penyebaran Coronavirus. Yurispruden, 4(2), 193. https://doi.org/10.33474/yur.v4i2.11239

Temel, S. (2014). The effects of problem-based learning on pre-service teachers' critical thinking dispositions and perceptions of problem-solving ability. South African Journal of Education, 34(1), 1–20. https://doi.org/10.15700/201412120936

Tortop, H. S. (2013). Meaningful Field Trip in Education of the Renewable Energy Technologies. Journal for the Education of the Young Scientist and Giftedness, 1(1), 8. https://doi.org/10.17478/jeysg.201318998

Veli, B. (2014). The effects of a problem based learning approach on students attitude levels: A meta-analysis. Educational Research and Reviews, 9(9), 272–276. https://doi.org/10.5897/err2014.1771

Widiastuti, E. (2013). Penerapan Media Pembelajaran Berbasis ICT dengan Aplikasi Lectora Inspire dalam Pembelajaran IPA (Studi Kasus Di SD Negeri Baran I Kecamatan Rongkop, Kabupaten Gunungkidul). Tesis.

Young, M. H., & Balli, S. J. (2014). Gifted and Talented Education (GATE). Gifted Child Today, 37(4), 236–246. https://doi.org/10.1177/1076217514544030