Improving Digital Competency for Educators and Education Personnel Through Google Workspace for Education

Ai Samrotul Fauziah[1]*, Fahmi Hasan Nugroho[2]

[1,2] UIN Sunan Gunung Djati Bandung, Bandung, Indonesia
* Correspondence e-mail; aisamrotulfauziah@uinsgd.ac.id

Article history	
Abstract	Fast-growing information technology impacts all aspects, including education, so all those involved in education must be able to use technology and information to facilitate work. This service aims to provide understanding, increase competence, and apply Google Workspace to education for educators and personnel. The method taken in this service is to use Community Based Research (CBR) or called Community Based Participatory Research (CBPR) is research based on a collaborative model between the community and the world of higher education that aims to carry out service learning actions to support social movements for the realization of social justice. The service method is carried out by holding workshops for partners. The implementation of the service begins by creating a website and school domain to create a Google Workspace for education and then conducting workshops on its use. The results of this service make MA Subulul Huda educators and education personnel competent in using Google Workspace for education.
Keywords	Competency Improvement; Google Workspace; Technological Development

1. INTRODUCTION

The development of information technology affects the teaching and learning process in education. Education must adjust to rapid technological developments to facilitate education in teaching activities such as providing material or assessment. In education, information and communication technology for educators has a dual role as learning materials or materials or media/tools in helping to deliver material to students. That way, information and communication technology is very closely related to the world of education and has an important role in education development (Aldiab et al., 2019; Pahlevi et al., 2022).

Education lasts for a lifetime (long life education). Education is known as Teaching, a process of teaching activities and learning that can occur in any environment and at any time (Asfahani et al., 2023; Rifat et al., 2023). Education is an important process in human life that aims to improve cognitive, affective, and psychomotor skills to build quality, useful humans for the nation. In line with that, the purpose of education (Featured on Craigslist, 2016) is to improve skills, skills, enhance ethics, strengthen character, and strengthen the spirit of togetherness to build oneself and jointly build the nation (Ardiyanti et al., 2021; Lascano Pérez & Altamirano Carvajal, 2023).

Law Number 20 of 2003, article 39, paragraph 2 concerning SPN (National Education System) states, "Educators are professionals who are tasked with planning and implementing processes in learning, evaluating or assessing learning outcomes, carrying out guidance and training and carrying out research or research and community service, especially for educators at the university level." In line with this, educators must improve their learning ability by adjusting to the times (Chen et al., 2020; Saputra et al., 2023).

Madrasah Aliyah (MAN) is a level of education equivalent to senior secondary education (SMA). Unlike ibtidaiyah or tsanawiyah education, which is equivalent to elementary and junior high schools, students can usually bring communication devices or mobile phones at this upper secondary education level. If only Educators and Education Personnel were technologically literate or synchronized learning with this technology, students would easily accept it, and learning would be more enjoyable (Amri et al., 2024; Nugroho et al., 2023).

MA Subulul Huda is a school located on Jl. Raya Darma No. 214 Kawahmanuk Village, Darma District, Kuningan Regency, West Java Province. It has three majors, Science, Social Studies, and Religion, with 32 educators and one education staff. MA subulul Huda Darma has 12 classes and 2 Computer labs. Lab facilities support

students, educators, and education staff in using and accessing information technology (IT). However, after interviewing with the principal, H. O. Misbah, M.Si, it turned out that the use of IT in schools could have been more optimal. The service workshop conducted at the MA Subulul Huda Darma school can provide awareness for Educators and Education Personnel to apply IT, especially Google Workspace, For Education in learning.

Learning in the Digital era is strongly influenced by information and communication technology. Education should adapt to technology to facilitate the learning and learning process. For educators and education staff, technology has a dual role as a tool that helps the learning process and a medium for delivering information, material, and assessment (Obloberdiyevna D S, 2022; Suryanti et al., 2024). However, all the benefits of this technology will only be felt if educators and education staff still apply technology in the ongoing learning process. Another factor that causes educational technology to be disregarded is the need for more knowledge among educators and personnel about educational technology, one of which is Google Workspace for Education (Agustina et al., 2023; Chen et al., 2020).

One way to improve the competence of educators and education personnel in this digital era is by conducting several trainings related to the use of educational technology, especially Google Workspace for Education (Heilporn et al., 2021; Otto & Dunens, 2021). Based on the analysis of these situations and problems, training was carried out in workshops to improve the digital competence of educators and education personnel through Google Workspace for Education (Falloon, 2020; Rahmelia et al., 2022).

Several studies show that advances in science and technology in the realm of education cause educational process activities to be more advanced. Hence, GWF needs to be done to keep pace with these developments. GWF helps facilitate the learning process caused by the development of science and technology progress (Sangsawang, 2015; Waham et al., 2023); (Al-Mamary, 2022; Indah Sari et al., 2020). Other studies also mention increased student learning outcomes after using the Google Workspace for Education-based Discovery Inquiry learning model. Some examine digital classroom learning management based on Google Workspace for Education, and the results show that GWF-based digital classes make classes well-managed (Widayati, 2021); (Al-Mamary, 2022; Faisal & Kisman, 2020). In his article, Philip Nguyen said that Many schools and universities use Google Workspace for Education as their LMS software to integrate physical and digital materials in the classroom (Nguyen, 2023). That way, the benefits of GWF, if implemented in learning, are not

only beneficial for educators but will also provide benefits for students.

The novelty of increasing digital competence for educators and education personnel through Google Workpace for Education This approach involves educators and education personnel in schools that have not used educational technology, especially in MA Subulul Huda Darma, by providing training and mentoring so that educators and education personnel have optimal knowledge and improvement of digital competence. Overall, increasing digital competence through Google Workspace for Education offers innovative changes in the use of educational technology to achieve learning that is by the times.

This research aims to improve digital competence for educators and personnel through Google Workspace for Education. After this community service, significant changes are expected and ultimately lead to increased competence for educators and education staff, including Increased awareness and responsibility to improve competence in learning using IT, Increased awareness, and willingness to improve the competence of educators and students through Google Workspace for Education; and Increased awareness to implement the results of workshops in everyday life, especially in carrying out learning using technology.

2. METHODS

An implementation method is needed to achieve the service target to carry out this service located at MA Subulul Huda Darma. The method taken in this service is to use Community Based Research (CBR) or called Community Based Participatory Research (CBPR) is research based on a collaborative model between the community and the world of higher education that aims to carry out service learning actions to support social movements for the realization of social justice. Community-based research aims to solve research problems to meet community needs and solve problems society faces. So that the result of CBR is to try to provide solutions or help solve problems that arise (Collins et al., 2018). In addition, CBR is an approach involving the community at various levels of role and participation that will benefit the community or society.

The CBR method is carried out through the following stages: Collaborating with researchers and communities, validating community knowledge by collecting and disseminating information, and social change as a means of achieving social justice. The steps that will be carried out by referring to the methodology used are as follows:

    a.   Collaborate with schools that are used as places of service;

b. Conduct questions and answers or discussion forums related to the theme of the workshop to be held

c. Scheduling and conducting training;

d. Ensure changes after the activity;

e. Monitoring: Evaluation and ends with an activity report.

In addition, data validity checks are performed using triangulation techniques, which involve using something outside the data to check or compare with the data itself (Sugiyono, 2019). Data analysis is done through data reduction, presentation, and conclusions, which results from the data analysis process, where researchers describe, analyze, and interpret research data. The conclusion is the essence of the overall research activity, with the chosen methodology aligned with the research objectives.

4.   FINDINGS AND DISCUSSION

The Community Service Team of UIN Sunan Gunung Djati Bandung carried out Community Service Activities to improve the digital competence of educators and education staff carried out at MA Subulul Huda Darma Kuningan, West Java, due to the use of IT in schools that have yet to.

The workshop conducted by the devotee on improving digital competence for educators and education staff was attended by 33 participants consisting of 32 educators and one education staff. Workshops or training at MA Subulul Huda are conducted offline (outside the network).

The first activity includes understanding learning using IT, especially Google Workspace for Education. According to digital competence, educators are part of one of the qualifications related to professional competencies that educators must have. Educators' digital competencies can be improved using educational applications, namely Google Workspace for Education (Aldawood et al., 2019; Lyman et al., 2023).

In the next session, the presentation and understanding of what is in the Google Workspace for Education application can be used by educators and education staff in the learning process or by making learning administration reports. Based on the applications available in Google Workspace, namely Google Mail, Google Drive, Google Docs, Google Sheets, Google Slides, Google Forms, Google Sites, Google Classroom, Google Meet, Google Jamboard, and Google Chat (Akinwamide & Oguntade, 2023; Huda et al., 2019).

In the next stage, the workshop's core is the presentation of each application and the practice of applying Google Workspace for Education. At this stage, educators and students are guided to open and follow the Google Workspace application taught by

the speaker. Workshop on improving the competence of educators and education staff by Mr. Fahmi Hasan Nugroho and Mrs. Ai Samrotul Fauziah as community service of UIN Sunan Gunung Djati Bandung.

Figure 1. Documentation of Workshop Activities

The last stage of this competency improvement workshop was distributing questionnaires to 33 participants participating in the workshop activities. The questionnaire distribution aims to determine the extent of the success of the workshop that has been carried out at MA Subulul Huda Darma Kuningan.

Table 1. Literacy mastery Google Workspace for Education

No	Statement	Value	STB	TB	KB	B	SB
1	Do you actively open and respond to emails?	Before	0,0	3,0	3,0	51,5	42,4
		After	0,0	0,0	3,0	54,5	42,4
2	Do you understand the use of calendars in the learning process?	Before	9,1	12,1	33,3	30,3	15,2
		After	3,0	9,1	36,4	33,3	18,2
3	Are you skilled at using Google Classroom to learn?	Before	6,1	12,1	12,1	36,4	33,3
		After	3,0	6,1	9,1	45,5	36,4
4	Are you skilled at using Google Forms for surveys and assessments?	Before	12,1	9,1	21,2	30,3	27,3
		After	6,1	6,1	24,2	33,3	30,3
5	Are you skilled at using docs, slides, and sheet applications for learning?	Before	6,1	9,1	9,1	39,4	36,4
		After	3,0	6,1	9,1	45,5	36,4

| 6 | Are you skilled at in managing reports in Google Spreadsheets? | Before | 3,0 | 15,2 | 18,2 | 33,3 | 30,3 |
| | | After | 0,0 | 12,1 | 9,1 | 45,5 | 33,3 |

Based on the Google Workspace mastery table before and after the workshop, the results show a change in mindset, awareness, understanding, and utilization of educators and students in opening and responding to emails, the use of Google Calendar, Google Classroom, google forms, google docs, slides, sheets, and spreadsheets in the learning process.

Opening and responding to emails from before is very 0.0; can't be 3.0; less can be 3.0 can be 51.5, and very can 42.4 after the workshop becomes very unable 0.0; can't be 0.0, less can be 3.0; It can be 54.5, and it can very well be 42.4.

Understanding the calendar in the learning process from before really can't be 9.1, can't be 12.1; less can be 33.3, can be 30.3, and very can be 15.2 after the workshop becomes very unable 3.0; can't be 9.1 less can be 36.4; It can be 33.3, and it can very well be 18.2.

The use of Google Classroom in learning from before cannot be 9.1, cannot be 12.1; less can be 33.3, can be 30.3, and very can be 15.2 after the workshop becomes very unable 3.0; can't be 9.1 less can be 36.4; It can be 33.3, and it can very well be 18.2.

Skilled in using google forms for surveys and assessments from before can not be 12.1, cannot be 9.1; less can be 21.2, can be 30.3 and very can be 27.3 after the workshop can be very unable 6.1; can not be 6.1; less can be 24.2; can be 33.3 and very can be 30.3.

Skilled in utilizing docs, slides, sheets applications for learning from before can not be 6.1; cannot be 9.1; less can be 9.1 can be 39.4 and very can be 36.4 after the workshop can be very unable to 3.0; can not be 6.1; less can be 9.1; can be 45.5 and very can be 36.4.

Skilled in managing reports in *Google Sheets* from before can not be 3.0; can not be 15.2; less can be 18.2. It can be 33.3, and it can be 30.3. After the workshop, it can be very can not be 0.0; it can not be 12.1; less can be 9.1; it can be 45.5, and very can be 33.3.

The questionnaire is related to using existing applications in Google Workspace for Education. Overall, the questionnaire results showed that the understanding of educators and education staff of MA Subulul Huda Darma increased. From the workshops conducted, many educators have begun to be interested in using *Google Forms* to conduct assessments in the classroom because, in addition to being more

effective and time-efficient, Google Forms can also provide objective assessments.

The use of *Google Workspace for Education* in the world of education makes learning more interesting and fun. Besides that, its use can be adjusted to users' needs to get better learning results as desired. The service offered by Google is free and has many facilities that make it easier for users to carry out learning activities anytime and anywhere without being bound by space and time (Erva et al., 2023; Fatimah, 2019). In addition, it has many facilities and can be adjusted to the population's needs. The classroom creates a learning community containing information, materials, and assignments. Google Meet is used to conduct online learning activities. Google Documents, save documents. Google Slides, create a presentation. Google Forms is used to conduct surveys and quiz learning assessments. And Google Chat, which makes it easy to send a message. With the many features offered by Google in the world of Education, it is very easy for teachers to improve the quality of Education (Hadar et al., 2020; Millner, 2021).

Workshops on improving the digital competence of educators and education staff are very important. This is based on Binkley, who suggests that four categories of 21st-century skills must be possessed (Bray et al., 2023; Care et al., 2018);

a) Thinking: Creativity and innovation, critical thinking, problem-solving, decision-making, and learning about learning;
b) Work: Communicate and collaborate;
c) Work tools: General knowledge and skills of information and communication technology;
d) Way of life: career, personal, and social responsibility, including awareness of culture and competence.

Technology integration in learning is a component of 21st-century learning. The 21st century is popular by bringing changes, namely the rapid development of Science and Technology (IPTEK), which results in a change in the learning paradigm marked by changes in curriculum, media, and technology. Good learning media interpret abstract concepts to be easy to understand (Jamin et al., 2024; Sebsibe et al., 2023). Information and Communication Technology (ICT)-based learning must be distinct from the demands of 21st-century learning (Mutiani & Faisal, 2019; Retnawati et al., 2018).

However, several things must be considered with the rapid pace of technology in the field of Education; educators and education personnel must be able to direct and control students to use technology properly so that educators become experts and explore and collaborate with students in finding discoveries in the learning process

(Judijanto et al., 2022; Lascano Pérez & Altamirano Carvajal, 2023).

The rapid development of information technology impacts all fields, including the field of Education. Global demands require the world of education to always adjust technological developments to improve the quality of education; given the importance of educators in education, especially in this technological era, the need for quality educators is a hope for the glorious future of the nation (Bertheau, 2020; O'Connor et al., 2023). The need for quality educators is getting higher now and must be addressed positively by education managers. Improving the quality of education at the education level will positively impact the creation of quality educators in the future (Hake, 1998; Jurin et al., 2010; O'Meara & Jaeger, 2019).

The flow of technological development must be translated by changing learning systems and patterns in schools or colleges. Therefore, learning activities that conventional models and textual approaches still dominate must utilize digital media optimally (Al-Mamary, 2022; Faisal & Kisman, 2020; Naim et al., 2022).

Digital Competency Improvement Workshops for Educators and Education Personnel through Google Workspace for Education are very important to be carried out so that educators and education personnel have digital capabilities to keep pace with the times. Educational innovation will always continue because educators and education staff need to continue to learn and want to develop existing knowledge rather than feeling satisfied with the knowledge they already understand.

5. CONCLUSION

The implementation of digital competency improvement workshops for educators and education staff at MA Subulul Huda Darma Kuningan West Java has a significant impact on increasing digital competencies owned by educators and education staff in terms of increasing awareness and responsibility to improve competence in learning using IT; Increased awareness and willingness to improve the competence of educators and students through Google Workspace for Education; and Increased awareness to implement the results of workshops in everyday life, especially in carrying out learning using technology. This dedication makes learning more effective and efficient by using technology in Education.

REFERENCES

Agustina, I., Siregar, L. A., Husain, D. L., Asfahani, A., & Pahmi, P. (2023). Utilization of Digital Technology in Children's Education to Enhance Creative and Interactive Learning. *At-Tarbawi: Jurnal Pendidikan, Sosial Dan Kebudayaan*, *10*(2), 276–283.

Akinwamide, T. K. E., & Oguntade, F. M. (2023). Facilitating Independent and Collective Writing Skill Proficiency: The Think-Pair-Share Strategy Involvement. *European Journal of Linguistics*, *2*(1). https://doi.org/10.47941/ejl.1196

Al-Mamary, Y. H. S. (2022). Why do students adopt and use Learning Management Systems?: Insights from Saudi Arabia. *International Journal of Information Management Data Insights*, *2*, 1–9. https://doi.org/10.1016/j.jjimei.2022.100088

Aldawood, H., Alhejaili, A., Alabadi, M., Alharbi, O., & Skinner, G. (2019). Integrating digital leadership in an educational supervision context: A critical appraisal. *2019 International Conference in Engineering Applications (ICEA)*, 1–7.

Aldiab, A., Chowdhury, H., Kootsookos, A., Alam, F., & Allhibi, H. (2019). Utilization of Learning Management Systems (LMSs) in higher education system: A case review for Saudi Arabia. *Energy Procedia*, *160*, 731–737. https://doi.org/10.1016/j.egypro.2019.02.186

Amri, M., Asfahani, A., Kadeni, K., Arif, M., & Jamin, F. S. (2024). Community Empowerment In The Fields Of Education Entrepreneurship And The Environment In The Village. *Community Development Journal: Jurnal Pengabdian Masyarakat*, *5*(2), 3704–3712.

Ardiyanti, S., Qurbaniah, M., & Muldayanti, N. D. (2021). *Joyful Learning Model: Improving Higher Order Thinking Skill and Students' Learning Motivation at Senior High School*. *1*, 33–40. https://doi.org/10.29007/8n5b

Asfahani, A., El-Farra, S. A., & Iqbal, K. (2023). International Benchmarking of Teacher Training Programs: Lessons Learned from Diverse Education Systems. *EDUJAVARE: International Journal of Educational Research*, *1*(2), 141–152.

Bertheau, P. (2020). Assessing the impact of renewable energy on local development and the Sustainable Development Goals: Insights from a small Philippine island. *Technological Forecasting and Social Change*, *153*, 119919.

Bray, D. A., Girvan, D. C., & Chorcora, E. N. (2023). Students' perceptions of pedagogy for 21st century learning instrument (S-POP-21): Concept, validation, and initial results. *Thinking Skills and Creativity*, *49*, 1–14. https://doi.org/10.1016/j.tsc.2023.101319

Care, E., Kim, H., Vista, A., & Anderson, K. (2018). Education System Alignment for 21st Century Skills: Focus on Assessment. *Center for Universal Education at The Brookings Institution*.

Chen, C.-H., Shih, C.-C., & Law, V. (2020). The effects of competition in digital game-based learning (DGBL): a meta-analysis. *Educational Technology Research and Development*, *68*, 1855–1873.

Collins, S. E., Clifasefi, S. L., Stanton, J., Straits, K. J. E., Gil-Kashiwabara, E., Rodriguez Espinosa, P., Nicasio, A. V, Andrasik, M. P., Hawes, S. M., & Miller, K. A. (2018). Community-based participatory research (CBPR): Towards equitable involvement of community in psychology research. *American Psychologist*, *73*(7), 884.

Erva, R. A. L., Yulia, Y., & Nisa, A. F. (2023). Implementasi Metode Outing Class di Sentra Industri Kerajinan Bambu Ngampiran sebagai Sarana Apresiasi Karya Seni Berbasis Kearifan Lokal. *JS (JURNAL SEKOLAH)*, *6*(3), 48–56. https://doi.org/10.24114/js.v6i3.35542

Faisal, P., & Kisman, Z. (2020). Information and communication technology utilization effectiveness in distance education systems. *International Journal of Engineering Business Management*, *12*, 1–9. https://doi.org/10.1177/1847979020911872

Falloon, G. (2020). From digital literacy to digital competence: the teacher digital competency (TDC) framework. *Educational Technology Research and Development*, *68*, 2449–2472.

Fatimah, A. S. (2019). Portraying Learner's Autonomy in Extensive Reading Classroom. *OKARA: Jurnal Bahasa Dan Sastra*. https://doi.org/10.19105/ojbs.v13i1.2228

Hadar, L. L., Ergas, O., Alpert, B., & Ariav, T. (2020). Rethinking teacher education in a VUCA world: student teachers' social-emotional competencies during the Covid-19 crisis. *European Journal of Teacher Education*, *43*(4), 573–586.

Hake, R. R. (1998). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics*, *66*(1), 64–74. https://doi.org/10.1119/1.18809

Heilporn, G., Lakhal, S., & Bélisle, M. (2021). An examination of teachers' strategies to foster student engagement in blended learning in higher education. *International Journal of Educational Technology in Higher Education*, *18*, 1–25.

Huda, S., Rinaldi, A., Suherman, S., Sugiharta, I., Astuti, D. W., Fatimah, O., & Prasetiyo, A. E. (2019). Understanding of mathematical concepts in the linear equation with two variables: Impact of e-learning and blended learning using google classroom. *Al-Jabar: Jurnal Pendidikan Matematika*, *10*(2), 261–270.

Indah Sari, Anni Holila Pulungan, & Rahmad Husein. (2020). Students' Cognition and Attitude in Writing Descriptive Text. *Britain International of Linguistics Arts and Education (BIoLAE) Journal*, *2*(1), 395–404. https://doi.org/10.33258/biolae.v2i1.210

Jamin, N. S., Asfahani, A., Munirah, M., Prusty, A., & Palayukan, H. (2024). Cross-Cultural Pedagogical Perspectives: A Collaborative Study with Indian Scholars in

Childhood Education. *Absorbent Mind: Journal of Psychology and Child Development*, *4*(1), 77–85.

Judijanto, L., Asfahani, A., & Krisnawati, N. (2022). The Future of Leadership: Integrating AI Technology in Management Practices. *Journal of Artificial Intelligence and Development*, *1*(2), 99–106.

Jurin, R. R., Roush, D., & Danter, J. (2010). Environmental communication: Skills and principles for natural resource managers, scientists, and engineers. In *Environmental Communication: Skills and Principles for Natural Resource Managers, Scientists, and Engineers*. https://doi.org/10.1007/978-90-481-3987-3

Lascano Pérez, M. J., & Altamirano Carvajal, S. P. (2023). Think-Pair-Share strategy in speaking skill development. *ConcienciaDigital*, *6*(1.4). https://doi.org/10.33262/concienciadigital.v6i1.4.2039

Lyman, F. T., Tredway, L., & Purser, M. (2023). Think-Pair-Share and ThinkTrix: Standard Bearers of Student Dialogue. In *Contemporary Global Perspectives on Cooperative Learning: Applications Across Educational Contexts*. https://doi.org/10.4324/9781003268192-12

Millner, N. (2021). Unsettling feelings in the classroom: scaffolding pedagogies of discomfort as part of decolonising human geography in higher education. *Journal of Geography in Higher Education*. https://doi.org/10.1080/03098265.2021.2004391

Mutiani, M., & Faisal, M. (2019). Urgency of the 21st century skills and social capital in social studies. *The Innovation of Social Studies Journal*, *1*(1), 1–11.

Naim, N., Aziz, A., & Teguh, T. (2022). Integration of" Madrasah Diniyah" Learning Systems for Strengthening Religious Moderation in Indonesian Universities. *International Journal of Evaluation and Research in Education*, *11*(1), 108–119.

Nugroho, A. P., Asfahani, A., Sugiarto, F., Sufyati, H. S., & Setiono, A. (2023). Community Assistance in Utilizing Sharia-Based Digital Banking. *Amalee: Indonesian Journal of Community Research and Engagement*, *4*(2), 519–530.

O'Connor, J., Ludgate, S., Le, Q.-V., Le, H. T., & Huynh, P. D. P. (2023). Lessons from the pandemic: Teacher educators' use of digital technologies and pedagogies in Vietnam before, during and after the Covid-19 lockdown. *International Journal of Educational Development*, *103*(January), 1–10. https://doi.org/10.1016/j.ijedudev.2023.102942

O'Meara, K., & Jaeger, A. J. (2019). Preparing future faculty for community engagement: Barriers, facilitators, models, and recommendations. *Building the Field of Higher Education Engagement*, 111–131.

Obloberdiyevna D S, O. K. U. (2022). Teaching languages using modern educational methods. *International Journal of Intellectual and Cultural Heritage*, *2*(3), 105–109.

Otto, E., & Dunens, E. (2021). Imparting the Skills Employers Seek: Community-Engaged Learning as Career Preparation. *Journal of Community Engagement and*

Higher Education, *13*(1), 39–56.

Pahlevi, R. R., Suryani, V., Nuha, H. H., & Yasirandi, R. (2022). Secure Two-Factor Authentication for IoT Device. *2022 10th International Conference on Information and Communication Technology (ICoICT)*, 407–412.

Rahmelia, S., Haloho, O., Pongoh, F. D., & Purwantoro, B. (2022). Building an Environment That Motivates Education Sustainability in Tumbang Habaon Village, Gunung Mas, Central Kalimantan Province, During Pandemic through Participatory Action Research between Parents, Schools and Church. *Engagement: Jurnal Pengabdian Kepada Masyarakat*, *6*(1), 204–220.

Retnawati, H., Djidu, H., Kartianom, A., & Anazifa, R. D. (2018). Teachers' knowledge about higher-order thinking skills and its learning strategy. *Problems of Education in the 21st Century*, *76*(2), 215.

Rifat, M., Ilham, I., Bayani, B., & Asfahani, A. (2023). Digital Transformation in Islamic Da'wah: Uncovering the Dynamics of 21st Century Communication. *JIM: Jurnal Ilmiah Mahasiswa Pendidikan Sejarah*, *8*(3), 2933–2941.

Sangsawang, T. (2015). Instructional Design Framework for Educational Media. *Procedia - Social and Behavioral Sciences*, *176*, 65–80. https://doi.org/10.1016/j.sbspro.2015.01.445

Saputra, Y. K., Dylan, M., & Carmelo, D. (2023). Fostering Islamic Morality through Tahfidz Learning: Islamic Law. *International Journal of Educational Narratives*, *1*(2), 52–65.

Sebsibe, A. S., Argaw, A. S., Bedada, T. B., & Mohammed, A. A. (2023). Swaying pedagogy: A new paradigm for mathematics teachers education in Ethiopia. *Social Sciences and Humanities Open*, *8*(1), 1–10. https://doi.org/10.1016/j.ssaho.2023.100630

Sugiyono. (2019). *Metode Penelitian Pendidikan: Kuantitatif, Kualitatif, Kombinasi, R&D dan Penelitian Pendidikan*. Alfabeta.

Suryanti, S., Rofiah, C., Asfahani, A., Cindy, A. H., & Palayukan, H. (2024). Optimization Community Progress Through Empowerment In The Field Of Sustainable Education. *Community Development Journal: Jurnal Pengabdian Masyarakat*, *5*(2), 3640–3646.

Waham, J. J., Asfahani, A., & Ulfa, R. A. (2023). International Collaboration in Higher Education: Challenges and Opportunities in a Globalized World. *EDUJAVARE: International Journal of Educational Research*, *1*(1), 49–60.

Widayati, W. (2021). Penerapan Model Pembelajaran Discovery Inquiri Berbasis Google Workspace for Education Untuk Meningkatkan Hasil Belajar IPA. *Jurnal Literasi Digital*, *1*(3).