

## Challenges and Competency Gaps in the Implementation of 21st Century Learning: Evidence from Junior High Schools in Ambon, Indonesia

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**Abstract:** Teacher competency in 21st-century learning is critically important, especially in public junior high schools in Ambon City, where teachers are expected to master four key competencies required for 21st-century instruction. Although numerous studies have explored teacher preparedness for 21st-century learning, a research gap remains regarding how these competencies evolve in island regions like Ambon, where geographic constraints and uneven access to educational resources shape instructional practices. This study aims to examine the extent of teacher competency, the obstacles encountered, and the efforts made by teachers, schools, and local governments to develop teacher proficiency in 21st-century learning. A qualitative descriptive approach was employed, involving interviews, documentation studies, and observations with teachers, principals, school supervisors, and the head of the education and educational personnel division of the local education office. Data were analysed using the interactive model developed by Miles, Huberman, and Saldaña. The findings reveal that teachers demonstrate adequate mastery of critical thinking, problem-solving, communication, and collaboration skills, but still show weaknesses in creative and innovative thinking competencies. Furthermore, four challenges were identified: limited supporting facilities and infrastructure, low initiative or motivation, constraints related to senior or less productive teachers, and heavy teaching workloads that hinder competency development. Additionally, efforts by teachers, schools, and local governments to enhance teachers' competencies remain insufficient, particularly in 21st-century learning. These findings imply that strengthening teacher competency should be a priority in regional education policies and that they should contribute to the global discourse on the complexities of implementing 21st-century learning across geographically diverse contexts.

**Keywords:** 21st-Century Learning, Teacher Competency.

**Abstrak:** Kompetensi guru dalam pembelajaran abad 21 sangatlah penting, khususnya di Sekolah Menengah Pertama (SMP) Negeri di Kota Ambon, yakni di mana terdapat empat kompetensi yang harus dikuasai oleh guru dalam pembelajaran abad 21. Meskipun berbagai kajian telah membahas kesiapan guru dalam pembelajaran abad 21, masih terdapat kesenjangan penelitian terkait bagaimana kompetensi tersebut berkembang dalam konteks daerah kepulauan seperti Ambon yang memiliki keterbatasan akses dan fasilitas pendidikan. Studi ini bertujuan untuk menelaah sejauh mana kompetensi guru, kendala serta upaya yang dilakukan baik oleh guru, sekolah dan pemerintah daerah dalam mengembangkan kompetensi guru dalam pembelajaran abad 21. Pendekatan penelitian deskriptif kualitatif dengan melakukan pengumpulan data wawancara, studi dokumentasi dan observasi kepada guru, kepala sekolah, pengawas sekolah serta kepala bidang pendidikan dan tenaga kependidikan dinas pendidikan dan dianalisis menggunakan model interaktif Miles Huberman dan Saldana. Hasil penelitian ini menunjukkan bahwa guru sudah cukup baik penguasaan kompetensi berpikir kritis dan pemecahan masalah, komunikasi dan kolaborasi akan tetapi masih kurang pada kompetensi berpikir kreatif dan inovatif. Lebih lanjut terdapat empat kendala yakni kurangnya sarana prasarana pendukung, kurangnya inisiatif atau kemauan, faktor guru yang sudah senior dan kurang

*produktif karena beratnya beban mengajar dalam mengembangkan kompetensi. Serta kurangnya upaya baik oleh guru, sekolah dan pemerintah daerah dalam mengembangkan kompetensi guru khususnya dalam pembelajaran abad 21. Temuan ini memberikan implikasi bahwa penguatan kompetensi guru perlu dijadikan prioritas dalam kebijakan pendidikan daerah serta dapat memperkaya literatur global mengenai tantangan implementasi pembelajaran abad 21 di wilayah dengan karakteristik geografis yang beragam.*

**Kata Kunci:** *Pembelajaran Abad 21, Kompetensi Guru.*

## INTRODUCTION

Teachers are a key element of education and play a leading role in educational institutions. As educators, teachers face a variety of direct experiences in the implementation of education, influenced by various factors and their effects. In addition, teachers are figures who interact directly with students, parents, the education bureaucracy, and the community at large. The problems faced by teachers in the country's education system are acute and complex, ranging from teacher shortages and distribution to teacher competency and quality. Teachers are always at the center of attention in every moment related to education; the widespread spotlight on teachers underscores the centrality of their role in running the national education system.

Education is one of the most essential tools for every country to find its identity and prepare itself to face increased competition and challenges across industries, including education.<sup>1</sup> Furthermore, the modern world's current education system is undergoing several significant changes. It has been proven that scientific knowledge doubles every 5.5 years, raising questions for everyone at the beginning of the 21st Century about what knowledge and skills our children need to survive the rapid changes apparent in all areas of life.<sup>2</sup>

Entering the 21st Century, education must keep pace with the rapid development of technology-based education to avoid falling behind in mastering it. In the 21st Century, mastery of knowledge and technology is the key to the nation's generation succeeding in the face of global competition.<sup>3</sup>

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<sup>1</sup> Dian Grace Puspita, "PERTAMA DAN PERMASALAHANNYA EDUCATION QUALITY IMPROVEMENT IN JUNIOR HIGH SCHOOLS AND THE COMMON PROBLEMS" 6 (2021): 21–37.

<sup>2</sup> Mehadi Rahman, "21 St Century Skill ' Problem Solving ': Defining the Concept" 2, no. 1 (2019).

<sup>3</sup> Kanthil Esti and Siti Istiyati, "Analisis Peran Guru Dalam Meningkatkan Keterampilan Berpikir Fluency Pada Peserta Didik Sekolah Dasar," n.d., 77–82.

Teachers' role as informants is to provide information on developments in science and technology.<sup>4</sup> Therefore, 21st-century teachers must continue to develop their competencies despite the many complex problems they face in Indonesia.

The learning skills students need to face the increasingly complex life in the 21st Century are "The 4Cs": communication, collaboration, critical thinking, and creativity. Teachers are expected to be able to create learning strategies that can hone these four skills.<sup>5</sup>

Teachers' skills in 21st century learning are divided into five skills, namely: (1) the ability of teachers to promote and stimulate student learning and creativity; (2) designing and improving student learning experiences through digital assessment; (3) becoming a draftsman, study and work style in the digital age; (4) becoming a model of social responsibility in the digital age; (5) participating in self-development and leadership. Furthermore, the key to rapid progress in education is teachers' ability to adapt and innovate in every lesson.<sup>6</sup> Teachers are expected to improve and update their skills continuously. Furthermore, it is explained that educators or teachers must understand and master the learning material comprehensively, broadly, and deeply in accordance with the subject they teach, and possess expertise in technology throughout the learning process, in line with the development of 21st-century technology-based learning.

The province of Maluku has nine districts and two cities, one of which is Ambon City, the capital of Maluku Province, established on September 7, 1575. It is one of the regions used as a parameter for educational progress in Maluku, particularly in the implementation of 21st-century technology-based learning, which requires teachers to have adequate competencies.

Teachers in Ambon City lack technological knowledge due to other factors, namely: (1) Uneven teacher competence, qualifications, and distribution in several junior high schools in Ambon City, based on the author's previous research in 2021; (2) As reported on the online media channel Rakyat Maluku on May 3, 2023, with the title "Facilities and Infrastructure in Ambon City Must Be Improved," the Acting Mayor of Ambon stated that the limitations of school infrastructure must be addressed immediately to support the teaching and

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<sup>4</sup> D A N Tanggung Jawab and Hamid Darmadi, "MENJADI GURU PROFESIONAL Diperbincangkan , Karena Guru Merupakan Sumber Kunci Keberhasilan Pendidikan . Didik Yang Menyangkut Berbagai Aspek Yang Bersifat Manusiawi Yang Unik Dalam," n.d., 161–74.

<sup>5</sup> "21st CENTURY STUDENT OUTCOMES," n.d., 1–9.

<sup>6</sup> *IMPLEMENTASI PEMBELAJARAN ABAD 21 PADA BERBAGAI BIDANG ILMU PENGETAHUAN*, n.d.

learning process for students and teachers, one of which is the availability of software as a learning medium; (3) Teachers' ability to use information technology tools, such as computer applications and the internet, is still relatively low as a learning medium, especially at SMP Negeri 10 Ambon.<sup>7</sup>

Teacher competence is one of the main factors in the effective and efficient implementation of national, provincial, regional, and institutional education processes in Indonesia. Furthermore, teacher competence is a significant factor influencing the effective implementation of the learning process in the classroom.<sup>8</sup> Furthermore, educational components such as curriculum, facilities and infrastructure, costs, and time will not function effectively if the essence of the educational process, namely teacher competence, is not fulfilled in its implementation. Competent teachers are totally dedicated to their work, preparing lessons and encouraging students to master the material.<sup>9</sup>

Various global frameworks, such as the OECD Learning Compass 2030, UNESCO's Global Framework on Future Competencies, the P21 Framework for 21st Century Learning, and European DigCompEdu, emphasize that critical thinking, creativity, communication, collaboration, and digital literacy are the foundations of 21st-century learning.<sup>10</sup> However, empirical studies examining how this framework is implemented in regional schools, particularly in public junior high schools in Ambon City, remain very limited. This gap in the literature indicates that there is no comprehensive description of the extent to which teachers have mastered 21st-century competencies, the obstacles they face in implementing them, and how schools and local governments contribute to their development. Therefore, this study aims to analyze the implementation of 21st-century learning competencies by public junior high school teachers in Ambon City, identify the obstacles encountered, and examine the efforts of teachers, schools, and local governments to improve these competencies. Thus, this study aims to answer questions about how teachers' competencies in implementing 21st-century skills are reflected in learning practices, what obstacles hinder their application, and how various parties strive to support teachers' professional development amid the demands of 21st-century learning.

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<sup>7</sup> Negeri Ambon, Sebagai Media, and Pembelajaran Yang, "Jurnal Pengabdian Masyarakat Jamak (Manajemen & Akuntansi)," *JURNAL PENGABDIAN MASYARAKAT JAMAK (MANAJEMEN & AKUNTANSI)* 03, no. 01 (2020): 217–23.

<sup>8</sup> Ambon, Media, and Yang.

<sup>9</sup> Siti Bahiroh et al., "IMPROVING STUDENT HAPPINESS THROUGH THE SNOWBALL THROWING METHOD IN THE IMPLEMENTATION OF STUDENT CONCELING GROUPS OF STATE VOCATIONAL SCHOOLS 2 DEPOK YOGYAKARTA," *Journal of Critical Reviews* 17, no. 5 (2020): 563–68.

<sup>10</sup> Bahiroh et al.

## LITERATURE REVIEW

Learning is a planned process designed by educators to help students achieve predetermined goals. In the 21st Century, the learning process has undergone significant changes, mainly due to technological development, the rapid flow of information, and the diversification of learning media. These conditions require teachers to have greater adaptive competencies to manage technology-based learning and build learning experiences that meet the demands of the times.<sup>11</sup>

Changes in the education ecosystem have prompted a shift in teaching approaches towards developing higher-order thinking skills. The P21 (Partnership for 21st Century Learning) framework groups 21st-century skills into four core competencies (4Cs): critical thinking, communication, collaboration, and creativity and innovation. These four competencies provide teachers with the basis for designing learning experiences that encourage interaction, exploration, and active problem-solving.

In line with this, the OECD Learning Compass 2030 emphasizes the need for reflective, collaborative, and future-oriented competencies, requiring teachers not only to deliver content but also to create empowering learning experiences. Teachers act as facilitators, encouraging students to become independent learners and adapt to complex social environments.

The technological competency framework for teachers is also clarified through two critical models. First, DigCompEdu outlines six areas of digital competency for teachers: technology for learning, digital assessment, communication, student empowerment, and professional development.<sup>12</sup> Second, the TPACK (Technological, Pedagogical, and Content Knowledge) model emphasizes the importance of integrating these domains in a balanced manner. TPACK stresses that the use of technology must align with pedagogical strategies and characteristics as well as with learning materials, to produce meaningful learning experiences.

These three frameworks (P21/OECD, DigCompEdu, and TPACK) form a conceptual synthesis of the competencies that 21st-century teachers need. The P21/OECD framework describes the general competencies that must be developed; DigCompEdu explains specific digital competencies; and TPACK

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<sup>11</sup> I Made Wiguna Yasa<sup>2</sup>) & Ni Nyoman Tri Wahyuni<sup>3</sup>) I Komang Wisnu Budi Wijaya<sup>1</sup>), "APLIKASI KONSEP PEMBELAJARAN ABAD KE-21 DALAM PEMBELAJARAN ILMU PENGETAHUAN ALAM (IPA) DI SEKOLAH DASAR (SD)," *Jurnal Ilmiah PGSD FKIP Universitas Mandiri* 09 (2023): 2574–81.

<sup>12</sup> Anastasia Economou, "DigCompEdu SELFIEforTEACHERS," no. May (2023).

provides the basis for integrating technology, pedagogy, and content into learning practices. Thus, 21st-century teacher competencies are not only about mastering technology but also about managing learning strategies, facilitating collaboration, delivering creative learning, and developing students' critical thinking skills.<sup>13</sup>

In this context, the role of teachers is very strategic. Teachers must create an inclusive, enjoyable, technology-based learning environment while ensuring learning remains competency-oriented. Mastery of various digital devices, effective communication, and collaboration skills are essential for supporting the achievement of learning objectives. Today's teachers are required to have a global perspective, be sensitive to cultural diversity, be adaptable to change, and use a variety of learning approaches appropriate to their students' characteristics.<sup>14</sup>

Although various theoretical frameworks have provided clear guidelines for 21st-century teacher competencies, implementation gaps often arise, especially in schools with limited facilities, uneven teacher digital capacity, and a low culture of professional reflection. Many teachers understand the importance of 4C competencies, but not all can integrate technology pedagogically in line with the TPACK or DigCompEdu frameworks. Therefore, empirical studies are needed to examine how these competencies manifest in school learning practices, including the supporting factors, obstacles, and development efforts.

## RESEARCH METHOD

This study uses a qualitative descriptive approach to describe in depth participants' experiences, practices, and views regarding teacher competence in 21st-century learning. This approach is based on the assumption that educational reality must be understood through meanings that arise from the natural context, so that researchers play a direct role as the main instrument in capturing phenomena, interpreting data, and maintaining the integrity of meaning.<sup>15</sup>

Data collection was conducted through semi-structured interviews, in-depth interviews, and direct observation at schools. The research participants consisted of 19 people: the Head of the Education and Teaching Staff Division of the Education Office, two school supervisors, four public junior high school principals, and 12 teachers from various public junior high schools in Ambon

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<sup>13</sup> Sikha Nayak, "Digital Literacy or Digital Competence : Aligning Teacher Competence Frameworks to 21st-Century Educational Context" 13, no. 4 (2023): 930–35.

<sup>14</sup> Nayak.

City. In addition to this primary data, the study was also supported by secondary data in the form of official documents from the Education Office and schools, including policy archives, curriculum documents, supervision reports, and observation records. The entire research process lasted three months, from data collection through analysis and verification.<sup>16</sup>

Data validity was ensured through source triangulation by comparing information from various educational actors, as well as through technical triangulation by cross-checking interview results with observations and documentation. After all data were collected, the analysis was carried out thematically, following the interactive model of Miles, Huberman, and Saldaña. The analysis stage began with Reading the entire transcript to perform initial coding, then filtering the codes into focused codes relevant to the issue of 21st-century competencies. Codes with similar meanings were then combined into categories, which further developed into main themes such as competency mastery, obstacles, and teacher development efforts. In the next stage, these themes were presented in the form of narratives and a matrix of inter-category relationships to make it easier for researchers to assess patterns and draw interpretations. The conclusions were provisional and continuously verified by recross-referencing the themes with the raw data, including field clarifications with participants when discrepancies were found.<sup>17</sup>

The entire research process was conducted in accordance with ethical principles. Each participant was informed of the research objectives and guaranteed the confidentiality of their identity. Participation was voluntary through an informed consent mechanism, and respondents had the right to withdraw from the study at any time. In addition, research permission was obtained from the Ambon City Education Office and the principals of the schools where the research took place. All data was coded and used exclusively for academic purposes.<sup>18</sup>

## RESULT AND DISCUSSIONS

This section presents the results of qualitative data collection, which were analyzed in depth to explore their meaning and relate them to the research's theoretical context.

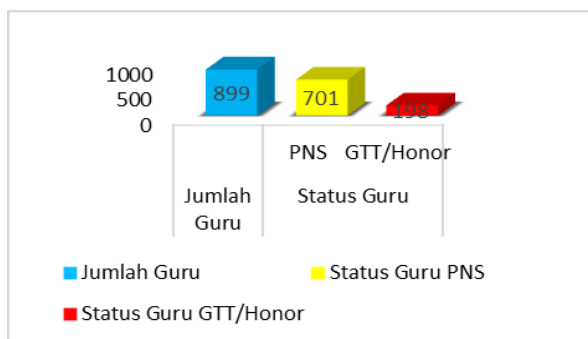
Based on the data obtained, it appears that in 2024 there will be a total of 899 teachers in public junior high schools in Ambon City, comprising 701 civil servant teachers and 198 temporary/honorary teachers.

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<sup>16</sup> Sugiyono., *Metode Penelitian Kombinasi (Mix Methods)*, 2015.

<sup>17</sup> Sugiyono.

<sup>18</sup> *QUALITATIVE DATA ANALYSIS A Methods Sourcebook*, n.d.



**Figure 1.** Number and Status of Public Junior High School Teachers in Ambon City

Educational success is inseparable from the learning provided to students; their competence is one of the things that needs improvement. Therefore, based on research on 21st-century learning competencies, several competencies show fairly good results. These results refer to teachers' sufficient mastery of the four 21st-century skills in the use of technology in classroom teaching and learning.

### **Teacher Competence in 21st Century Learning at Ambon City Public Junior High Schools**

The study's results show that public junior high school teachers in Ambon City generally have a strong command of competencies, especially in critical thinking and collaboration. Teachers can connect learning concepts to classroom activities that stimulate students to think deeply, evaluate information, and present arguments systematically. One teacher explained:

*"We ask thought-provoking questions to encourage students to think deeply before answering, and then we facilitate group discussions so they can relate concepts to real-life experiences". (G1)*

These findings align with the principles of the P21 Framework, which emphasize the importance of developing critical thinking skills, problem-solving, and students' ability to integrate knowledge holistically. In addition, the use of technology to support discussions and deliver interactive material demonstrates the implementation of TPACK in learning practices. Teachers' communication skills also appear strong, as they help students express their ideas and arguments clearly while providing constructive feedback. Putra & Hasan's (2023) study also emphasizes that critical thinking and practical communication skills are key factors in successful 21st-century learning.



However, in terms of creativity and innovation, teachers are still limited to existing learning methods, such as Canva, PowerPoint, and videos. One teacher said:

*“We follow commonly used learning models and have not tried completely new methods.”* (G2)

This condition shows that the integration of pedagogical innovation in TPACK is not yet optimal. A study conducted by Rachman in 2022 also shows a similar phenomenon: mastery of technology does not automatically increase creativity when teachers are not given the space to develop innovative methods and strategies that encourage students to explore their thinking.<sup>19</sup>

### **Teachers’ Challenges in 21st Century Learning at Ambon City Public Junior High Schools**

This study identifies several obstacles that hinder the development of teacher competencies. The main factors include limited facilities and infrastructure, low initiative for independent self-development, senior teachers who struggle to keep up with technological developments, and heavy teaching loads.

*“Training is available, but there isn’t enough of it, and it lacks focus to help us develop our competencies in depth,”* (G4) said a teacher.

This obstacle affects teachers’ ability to optimally apply all 21st-century competencies, particularly in creativity and technology use. These results align with Lestari’s findings, which show that structural factors and teachers’ workloads are significant barriers to the development of 21st-century competencies. Thus, even though teachers have specific abilities, institutional challenges and resource constraints need to be overcome so that critical thinking, creativity, collaboration, and communication skills can be fully implemented.<sup>20</sup>

### **Efforts by Teachers, Schools, and Local Governments to Develop 21st Century Learning Competencies at Public Junior High Schools in Ambon City**

Based on the study’s results, it appears that public junior high school teachers in Ambon City lack the initiative to develop themselves independently and still rely on training, education, and workshops provided by fellow teachers through learning communities and the Education Office. On the other hand,

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<sup>19</sup> Nayak, “Digital Literacy or Digital Competence: Aligning Teacher Competence Frameworks to 21st-Century Educational Context.”

<sup>20</sup> Nayak.

the Education Office itself lacks specific programs for teacher competency development. It is limited to annual routine programs organized in collaboration with other agencies such as BBGP Maluku and BPMP Maluku. This aligns with the expectation that teachers continuously strive to improve and update their skills.<sup>21</sup>

Schools also offer in-house training programs, but most emphasize the delivery of material rather than the evaluation of post-training practices. Local governments, through their education agencies, implement training programs in IT, literacy, numeracy, the KSOP curriculum, and competency tests for promotion. However, these programs have not been designed to be sustainable for the comprehensive development of teachers' competencies.<sup>22</sup>

As well as the lack of effort by schools in encouraging the development of their teachers' competencies, which is limited to in-house training programs held at the beginning of the school year, and focuses more on delivering material rather than on evaluation or feedback, so that teachers can put into practice what they have learned from the training or education they have received.

Furthermore, the local government, through the Ambon City Education Office, is implementing various teacher career development programs through IT training, literacy and numeracy training, KSOP curriculum training, strengthening competency tests for promotion, and expanding the Gasing method.

Overall, the study's results show a pattern consistent with the TPACK and P21 Framework, in which teachers have mastery of basic competencies but remain limited in pedagogical innovation.<sup>23</sup> Several other studies show a similar phenomenon: mastery of technology and pedagogy is not always followed by maximum creativity and innovation without systemic support. Therefore, collaboration between teachers, schools, and the government is needed to design sustainable development programs that emphasize practical application in everyday learning.

## CONCLUSION

Based on analysis and discussion, the competence of public junior high school teachers in Ambon City in 21st-century learning varies. Teachers have

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<sup>21</sup> Prosiding Seminar et al., "Prosiding Seminar Nasional Pendidikan Program Pascasarjana Universitas PGRI Palembang 03 Mei 2019," 2019, 125–29.

<sup>22</sup> Muhammad Andiyan Arifai et al., "Jurnal Jendela Pendidikan," *JURNAL JENDELA PENDIDIKAN Jurnal* 4, no. 02 (2024): 133–42.

<sup>23</sup> Arifai et al.

demonstrated fairly good mastery of critical thinking, problem-solving, communication, and collaboration, as reflected in their ability to facilitate discussions, connect concepts, and work with students and fellow teachers. However, their mastery of creativity and innovation remains limited because teachers more often use familiar teaching methods and have not developed new strategies to stimulate student creativity. The main obstacles encountered include limited facilities and infrastructure, high teaching loads, and low professional development initiatives, especially for senior teachers.

The findings of this study have important implications for educational practices and policies. Continuous professional development is an urgent necessity for teachers to optimally implement all aspects of 21st-century competencies, including creativity and innovation. Schools and local governments need to strengthen their support by providing structured training programs, ongoing mentoring, facilities, and encouraging collaboration within professional communities. The implementation of these strategies is expected to improve the quality of learning and ensure that students receive an education that meets the demands of the modern world. Theoretically, these results confirm the relevance of the TPACK and P21 Frameworks as guidelines for developing 21st-century skills at the local level.

Further research is recommended to explore teachers' creativity and innovation development practices in greater depth, including innovative technology-based methods that can be applied in the classroom. In addition, comparative studies between regions or schools can be conducted to understand the influence of contextual factors, such as policy support and facilities, on teacher competence. Future research could also assess the effectiveness of ongoing training programs in improving 21st-century skills, thereby generating evidence-based recommendations for more systematic teacher professional development.

## REFERENCES

- “21st CENTURY STUDENT OUTCOMES,” n.d., 1–9.
- Ambon, Negeri, Sebagai Media, and Pembelajaran Yang. “Jurnal Pengabdian Masyarakat Jamak (Manajemen & Akuntansi).” *JURNAL PENGABDIAN MASYARAKAT JAMAK (MANAJEMEN & AKUNTANSI)* 03, no. 01 (2020): 217–23.
- Arifai, Muhammad Andiyan, Murni Karomah, Muhammad Fauzan Rivaldi, Muhammad Agam Averosy, Muhammad Ulil, Amri Nur, and Nurul Malikah. “Jurnal Jendela Pendidikan.” *JURNAL JENDELA PENDIDIKAN Jurnal* 4, no. 02 (2024): 133–42.

- Bahiroh, Siti, Sekar Ayu Pratiwi, Fitriah M Suud, Universitas Muhammadiyah Yogyakarta, and Kasihan Babtul. "IMPROVING STUDENT HAPPINESS THROUGH THE SNOWBALL THROWING METHOD IN THE IMPLEMENTATION OF STUDENT CONCEALING GROUPS OF STATE VOCATIONAL SCHOOLS 2 DEPOK YOGYAKARTA." *Journal of Critical Reviews* 17, no. 5 (2020): 563–68.
- Economou, Anastasia. "DigCompEdu SELFIE for TEACHERS," no. May (2023).
- Esti, Kanthil, and Siti Istiyati. "Analisis Peran Guru Dalam Meningkatkan Keterampilan Berpikir Fluency Pada Peserta Didik Sekolah Dasar," n.d., 77–82.
- I Komang Wisnu Budi Wijaya<sup>1)</sup>, I Made Wiguna Yasa<sup>2)</sup> & Ni Nyoman Tri Wahyuni<sup>3)</sup>. "APLIKASI KONSEP PEMBELAJARAN ABAD KE-21 DALAM PEMBELAJARAN ILMU PENGETAHUAN ALAM (IPA) DI SEKOLAH DASAR (SD)." *Jurnal Ilmiah PGSD FKIP Universitas Mandiri* 09 (2023): 2574–81.
- IMPLEMENTASI PEMBELAJARAN ABAD 21 PADA BERBAGAI BIDANG ILMU PENGETAHUAN, n.d.
- Jawab, D A N Tanggung, and Hamid Darmadi. "MENJADI GURU PROFESIONAL Diperbincangkan , Karena Guru Merupakan Sumber Kunci Keberhasilan Pendidikan . Didik Yang Menyangkut Berbagai Aspek Yang Bersifat Manusiawi Yang Unik Dalam," n.d., 161–74.
- Jewarut, Siprianus, Margaretha Lidya Sumarni, Blasius Manggu, Hendrikus Torimtubun, and Institut Shanti Bhuana. "Analisis Transformasi Mengajar Guru Sekolah Dasar Daerah Perbatasan , Berbasis TPACK ( Technology Pedagogical Content Knowledge ) Dalam Bingkai Kurikulum Merdeka." *Journal of Education Research* 5, no. April (2024): 2155–63.
- Nayak, Sikha. "Digital Literacy or Digital Competence : Aligning Teacher Competence Frameworks to 21st-Century Educational Context" 13, no. 4 (2023): 930–35.
- Puspita, Dian Grace. "PERTAMA DAN PERMASALAHANNYA EDUCATION QUALITY IMPROVEMENT IN JUNIOR HIGH SCHOOLS AND THE COMMON PROBLEMS" 6 (2021): 21–37.
- QUALITATIVE DATA ANALYSIS A Methods Sourcebook*, n.d.
- Rahman, Mehadi. "21st Century Skill ' Problem Solving ': Defining the Concept" 2, no. 1 (2019).
- Seminar, Prosiding, Nasional Pendidikan, Program Pascasarjana, and Universitas PGRI. "Prosiding Seminar Nasional Pendidikan Program Pascasarjana Universitas PGRI Palembang 03 Mei 2019," 2019, 125–29.
- Sugiyono. *Metode Penelitian Kombinasi (Mix Methods)*, 2015.