

# Challenges and Transformations: Building Teacher Professionalism in the Digital Era for Superior Education

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**Abstract:** Education is the pillar and foundation of nation building and in the digital era that must develop rapidly, technology integration is a must. In an era filled with advances in digital technology, new challenges have emerged in the world of education, especially in building professionalism for educators. This research aims to identify challenges and transformation efforts in building the professionalism of geography teachers in the digital era in the five best schools in Gorontalo City. This study uses a qualitative approach with an in-depth interview method with 10 geography teachers from each school. Data will be collected through learning observations, interviews with geography teachers, and document analysis. Teaching patterns, important findings, and emerging trends in the digital era related to challenges and changes in building the professionalism of geography teachers in the digital era will be analyzed thematically. The results show that despite significant challenges, such as limited technological infrastructure and resistance to change, teachers are actively trying to integrate digital technology in learning. This transformation is seen in the use of Geographic Information Systems (GIS) and digital project-based learning that have improved student engagement and learning effectiveness. These findings highlight the importance of institutional support and continuous professional development to strengthen teacher professionalism in the digital era.

**Keywords:** Challenge; Digital Era; Geography Teacher; Professionalism; Transformation

## Introduction

The development of digital technology has changed various aspects of life, including in the field of education. In the digital age, teacher professionalism, especially in the field of geography, has become crucial to ensure that students receive a relevant and high-quality education. Teachers' professionalism in this era not only includes teaching skills, but also skills in using digital technology to support the learning process. This research focuses on the five best schools in Gorontalo City: SMAN 3, SMAN 1, MAN 1, SMAN 2, and SMAN 4 Gorontalo City. The goal is to explore the challenges faced by geography teachers and the transformation they undertake in building professionalism in the digital era. In an era filled with advances in digital technology, new challenges have emerged in the world of education, especially in building professionalism for educators.

Teachers' professionalism includes not only mastery of subject matter, but also the ability to integrate information and communication technology (ICT) into learning. Teachers play an important role in guiding students to become environmentally conscious citizens of the world in a geography context where an understanding of the world's diversity and environmental changes is increasingly important.

The education profession is one of the important professions in determining the future of the young generation. In this digital era, the role of teachers is very important in directing and guiding students so that they can adapt to technological developments. In the world of education, the existence of the role and fungsi of teachers is one of the important factors to advance the world of education. Teachers are the most important part of learning activities, both in formal education and informal education. Therefore, an effort to improve the

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quality of education is inseparable from the various existences of teachers themselves. The socio-cultural philosophy in education in Indonesia has placed the function and role of teachers to have a dual and multifunctional role of interests in society. Apart from being an educator, the role of teachers is still expected to be able to transform science into life interests to face the world of education in the global era (Sakti, 2020). Teachers are professional educators with the main focus of educating, guiding, directing, training, assessing and evaluating students in early childhood education, formal education pathways, primary education and secondary education. As professionals, teachers are required to have academic qualifications, competencies, educator certificates, physical and spiritual health, and have the ability to realize national education goals. These competencies include pedagogical competence, personality competence, social competence and professional competence (Nata, 2023). Teachers who are not professional in developing learning models because they do not master technology cannot improve the quality of education in accordance with the development of the times (Qoshwa & Rusydiyah, 2020). Teachers need to be assisted in improving their professional quality in order to provide excellent learning services for students. This assistance can be carried out, among others, through the efforts of academic supervision of school supervisors which are carried out earnestly, systematically and continuously (Akhmad, 2022).

Teachers who are professional must have quality standards, including having academic qualifications, competencies (pedagogic, personality, professional and social), and educator certificates that can be seen from performance and behavior that shows the teaching profession. Teachers who have recognition as professionals are certainly able to carry out their work professionally with their functions (Rahmawati, 2019). The advancement of education and its quality are one of the factors that can be said to be advanced, but the quality of education in Indonesia is still relatively low. Along with the rapid progress of this era, the education taught to students must be balanced with the level of effectiveness because then the quality of education can be said both if students and graduates can adapt to the times. On the contrary, the problems of the Indonesia nation will gradually begin to be solved if an education is able to produce good human resources as well (Eko Wahyudi et al., 2022).

Currently, society, including teachers, has entered the digital era, which is an era that has surpassed the era of computer technology. With these various conditions, it is certain that the number of people who use digital technology will be much more, even to remote rural areas. Digital technology has offered a variety of communication, namely in addition to communication

with voice and SMS, it can also be through Facebook, WhatsApp, YouTube, Instagram (Mudarris, 2022). The use of digital technology in the learning process, the completion of various tasks, and the improvement of teacher competence cannot be separated from the flow of information and technology developments. Facing these challenges, teachers as the frontline in the world of education are required to be ready to change and adapt (Nuryani & Handayani, 2020). With learning based on lifelong education, there will be a change in attitude or behavior assisted by providing opportunities for experience, which can be developed with the realization of technology (Mufidah, 2019).

Education in Indonesia is still very low even though the educational facilities are quite adequate. This is because a teacher is not serious in directing and educating his students in the learning process. And based on the existing phenomenon that there are still many teachers who do not want to make fundamental changes, such as knowing and using the internet as a learning medium, they do not even know teaching by using projects that combine several subjects at once (Budiana, 2021). In an era filled with advances in digital technology, new challenges have emerged in the world of education, especially in building professionalism for educators. Teachers' professionalism includes not only mastery of subject matter, but also the ability to integrate information and communication technology (ICT) into learning. Teachers play an important role in guiding students to become environmentally conscious citizens of the world in a geography context where an understanding of the world's diversity and environmental changes is increasingly important.

The main objective of this study is to investigate the challenges faced by geography teachers in integrating digital technology into geography learning, as well as to understand the transformation required to improve their professionalism. Thus, the ultimate goal is to provide valuable insights for the development of educational policies and the development of geography teachers' professionalism.

## Method

This study uses mixed methods, namely qualitative and quantitative approaches. Data collection techniques with in-depth interviews, data are collected by recording and recording the results of interviews, then observations carried out in the classroom by looking at the interaction between teachers and students in utilizing technology, questionnaires distributed to students to get information on the effectiveness and support of facilities and documentation during the research as supporting data. The research subjects consisted of 10 geography teachers from the five best schools in Gorontalo City and 222 student respondents

from 5 schools in Gorontalo City. The data analysis techniques used are thematic analysis to process data from interviews and observations, descriptive statistics to analyze the distribution of students' responses to questions about the effectiveness and benefits of digital technology, and triangulation to ensure consistency and strengthen findings. In Sugiyono, "activities in qualitative data analysis are carried out interactively and take place continuously until the data is saturated, while in quantitative data obtained through questionnaires are analyzed using descriptive statistics". (Sugiyono, 2016). The research location can be seen in figure 1 of the following research location maps.

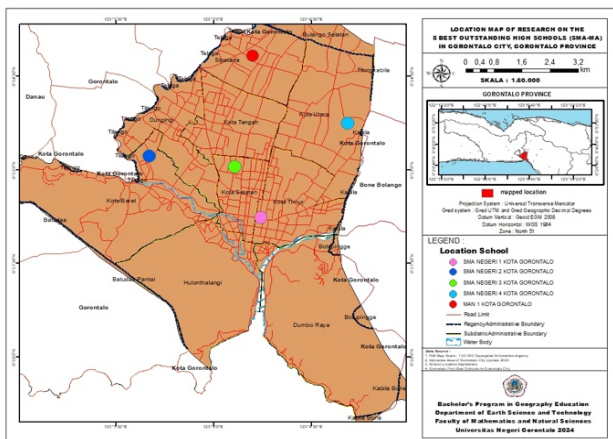


Figure 1. Research Location maps

The following is the flow of research carried out to make it easier to explain the main stages of research.

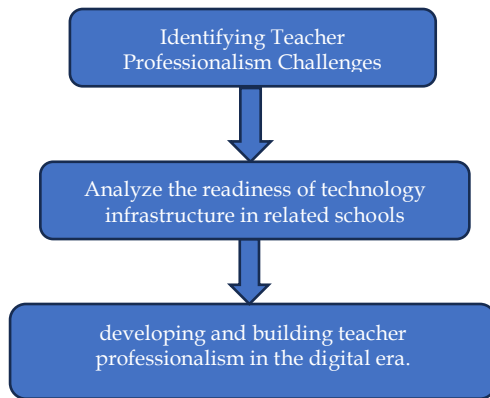


Figure 2. Flow chart Research

## Result and Discussion

This research reveals various challenges and transformation efforts carried out by geography teachers in the five best schools in Gorontalo City in facing the digital era. The main focus of this research is to understand how geography teachers can improve their professionalism by utilizing digital technology to achieve superior education.

### Experience Using Digital Technology

The results of interviews with Geography teachers in the five best schools in Gorontalo city are that they have often used digital technology in geography learning. The implementation is by adjusting materials that can be integrated with the use of digital technology. Such as the use of laptops and infocus integrated with applications that support learning, as said by one of the geography teachers of SMAN 1 Gorontalo City said that the use of digital technology can be implemented with cellphones, laptops, tablets and supporting applications such as quizizz, canva, kahoot, ppt, google slides, google earth, youtube videos, quipper and google maps. As per the research conducted by (Mansyur, 2024). Seftiani, teacher professionalism is the ability of teachers to perform their main duties as educators and teachers in managing classrooms, managing media and resources, mastering the foundations of education, getting to know learning interactions, assessing student achievements, and having responsibility in guiding their students. The existence of digital technology in learning makes it easier for teachers to provide explanations to students, provides interesting learning to students in participating in geography learning, facilitates access to other learning resources so that students do not get bored in listening to the teacher's explanations in class (Seftiani et al., 2020). The results of an interview with a geography teacher at SMAN 3 Gorontalo City (Lahabu, 2024) said that the main reason for the use of digital technology in learning is a need for them in delivering material, the same thing was also said by the teacher of MAN 1 Gorontalo City that the use of digital technology forces students and teachers to develop creativity in learning so that learning in the classroom is not monotonous with lectures. To strengthen the experience of using digital technology, the responses of students from 5 schools selected in this study were presented (Badjarad, 2024).

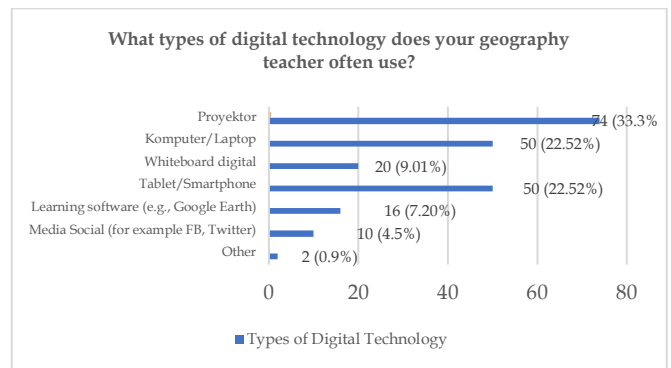
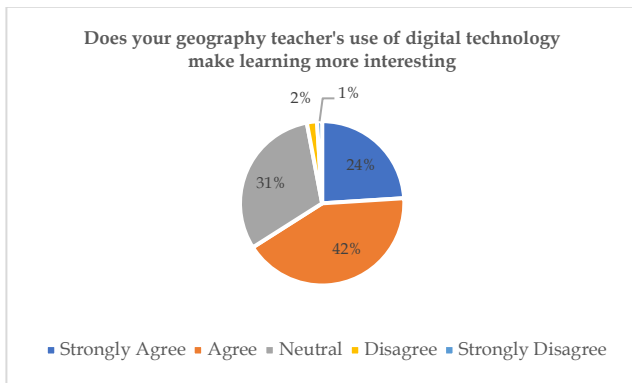


Figure 3. Students' response to the use of digital technology by teachers

In Figure 3, it can be seen that the use of digital technology has been widely used by teachers with the response obtained in percentage, namely using tablets/smartphones as much as 50 respondents or

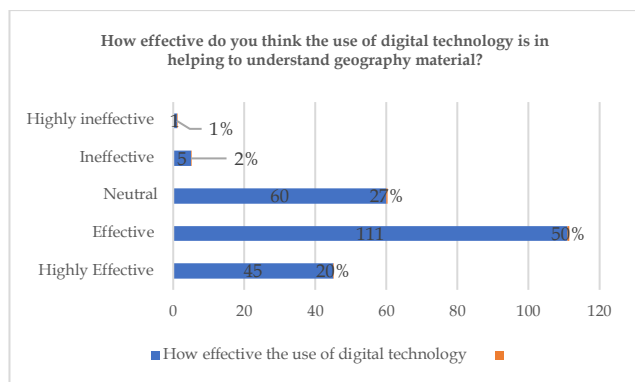


22.52%, using projectors as much as 74 respondents or 33.3%, using computers/laptops as much as 50 respondents or 22.52%, using digital whiteboards as much as 20 respondents or 9.01%, the use of learning software as much as 16 respondents or 7.20%, social media as much as 10 respondents or 4.5% and others as much as 2 respondents or 0.90%. This shows that the use of digital technology has been implemented in schools with various types.



**Figure 4.** Students' response to the use of digital technology makes learning interesting

In Figure 4, it can be concluded that the use of digital technology makes learning interesting with the percentage of respondents who answered in agreement with 42% or 93 respondents, neutral 31% or 70 respondents, answered strongly agree 24% or 53 respondents and those who answered disagree and strongly disagree as much as total 3% or 6 respondents. This shows that the use of digital technology greatly affects the learning atmosphere in the classroom so that learning is not monotonous and not boring.



**Figure 5.** Students' response to how effective the use of digital technology is in helping to understand geography material

In Figure 5, it can be seen how effective the use of digital technology is in helping to understand geography material, as many as 50% or 111 respondents answered effectively, as many as 27% or 60 respondents answered neutral, as many as 20% or 45 respondents answered very effectively, as many as 2% or 5

respondents answered ineffectively and as many as 1% or 1 respondents answered very ineffective. So it can be concluded that the use of digital technology helps effectively in understanding geography material for students, with the ease of current technology providing a learning experience that can be accessed anywhere and anytime, so that learning feels more fun and easy to understand.

### Challenges Faced by Geography Teachers

The results show that teachers in the top five schools in Gorontalo City face several key challenges in integrating digital technology into geography learning: Technological Infrastructure Limitations. Although these five schools are among the best in the city, there are still obstacles related to technological infrastructure, such as limited access to computer devices or tablets, as well as unstable internet connections. This hinders teachers' ability to consistently use digital technology in learning. The results of an interview conducted by one of the teachers of SMAN 2 Gorontalo City said that there is a lack of facilities that support learning, especially for application-based geography materials such as GIS and Remote Sensing, in schools in general have not held geography labs for this learning (Alfitra, 2024). In fact, when viewed from its function, Technology has a function, namely, first, creating a fun and exciting learning atmosphere. Second, providing skills in using technology, which can reveal the challenges of relevance in the environment outside of school. Third, it can be used as a *learning tool* using application programs and utilities. For learning at school, there are two main approaches in using technology, including students being able to learn "from" technology and "with" technology (Tekege, 2017).

**Lack of Professional Training and Development:** Some teachers reveal that they feel they lack adequate training on the use of digital technology in learning. The training that exists is often general and not specific to the needs of geography learning. It is hoped that geography teachers will maximize the learning community and revive MGMP in each school with themes related to geography materials as well as trainings on GIS and *remote sensing*. **Resistance to Change,** there are some teachers who show resistance to the adoption of digital technology, mainly due to habits with traditional teaching methods. This challenge is related to the perception that digital technology may be more burdensome than helpful in the learning process. This is reinforced by one of the teachers of SMAN 4 Gorontalo City said that sometimes it is difficult to upload learning videos because it does not support the network and the time it takes longer to upload, so it is assumed that learning using digital technology takes longer than conventional teaching (Sutiah, 2024).

### *Transformation in Geography Learning*

On the other hand, the study also found that some teachers have successfully transformed in geography learning in the following ways. **Use of GIS and Mapping Software:** Some teachers have started using Geographic Information Systems (GIS) and mapping software in their classrooms. The use of these tools not only makes learning more interactive but also allows students to better understand the concepts of geography through data visualization. **Digital Project-Based Learning:** Teachers in several schools have implemented a project-based learning model that involves the use of digital technology. For example, students are required to conduct geographic research that utilizes digital data and online mapping tools. This model helps students to be more engaged and think critically.

**Digital Collaboration:** Teachers in some schools are also starting to use digital platforms to collaborate with other teachers, both inside and outside the school. This includes sharing resources, learning ideas, and digital materials through online platforms. One of the innovative learning media that has technology used is digital interactive learning media based on Smart Apps Creator software or applications that support each learning (Hidayah & Mulyani, 2024).

### *Teacher Professional Development*

In line with the transformation in teaching methods, this study also highlights the importance of developing teacher professionalism in the digital era. Teachers who successfully integrate digital technology tend to have the following characteristics. **Willingness to Learn and Adapt:** Teachers who keep up with technology and are willing to learn and adapt to digital changes show an improvement in their learning effectiveness. They are also better prepared to face new challenges in education. **Active Participation in Training:** Teachers who are actively involved in training and professional development are better able to effectively implement digital technologies in the classroom. They are also better able to overcome the technical and pedagogical barriers associated with the use of technology. **Collaboration and Knowledge Sharing:** Teachers who actively collaborate with their peers and share knowledge about best practices in the use of digital technology demonstrate a higher level of professionalism. This not only improves their own skills but also helps their peers to thrive.

In line with the research conducted by Muhson that teacher professionalism can be done by, 1) mastering the provisions of professional standards. 2) Achieve qualifications and skills in accordance with the requirements. 3) creating great relationships through the MGMP professional community or learning community. 4) improving the culture and work ethic that prioritizes students. And 5) develop creativity and innovation in

utilizing information technology to be able to manage lessons (Muhson, 2004). Teacher professionalism needs to be needed according to the needs of teachers so that they continue to develop. The professionalism of the teachers, there needs to be a new paradigm in creating a professional teacher profile in the front, including: (1) having a noble personality; (2) strong mastery of knowledge; (3) skills to arouse students to science and technology; and (4) continuous professional development. These four aspects are a complete unity that cannot be separated in order to develop a professional teaching profession in the future (Muhsin, 2015). Identifying challenges and utilizing various opportunities need to be implemented in order to establish strategies for developing teacher professionalism in the digital era. The existing strategy includes the implementation of training, workshops, seminars, and certifications related to the development of media, resources, and the development of digital-based subject matter, supervision, KKG, PKG, MGMP (Saerang et al., 2023).

### *Implications for Superior Education*

This research confirms that to achieve superior education, especially in the field of geography, schools and teachers must be more proactive in addressing digital challenges and adopting the necessary transformations. Some of the key implications of these findings include. **Expansion of Access and Infrastructure:** Schools need to ensure that adequate technological infrastructure is in place, including better access to digital devices and the internet. This is an important first step to support technology-based learning. **Flexible Curriculum Development:** The geography curriculum needs to be designed in such a way that it allows for the integration of digital technologies more easily. This includes the provision of relevant digital resources and specialized training for teachers. **Ongoing Support for Teachers:** Schools and local governments should provide ongoing support for teachers in the form of training, mentoring, and learning communities that facilitate the development of their digital skills.

By overcoming these challenges and encouraging this transformation, it is hoped that the professionalism of geography teachers in Gorontalo City can continue to grow, and ultimately, can contribute significantly to the achievement of superior education in the digital era. The need to develop more effective learning programs, educational policies that support the use of technology, and additional academic support for students (Kuswanti et al., 2024).

## Conclusion

This research reveals that despite significant challenges, such as limited infrastructure and resistance to change, geography teachers in the top five schools in Gorontalo City are actively striving to transform and adopt digital technology in classroom teaching. Institutional support, infrastructure improvement, and continuous professional development are essential to strengthen teacher professionalism in the digital era. With this effort, it is hoped that the quality of geography education in Gorontalo City can continue to improve.

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## Author Contributions

Conceptualization, M., S.S., and M.R.P.; methodology, M., and M.R.P.; validation, S.S., and M.; formal analysis, M.R.P.; investigation, M. and M.P.R.; resources, M.; data curation, M.R.P.; writing—original draft preparation, M. and M.R.P.; writing—review and editing, M., and S.S.; visualization, M. All authors have read and agreed to the published version of the manuscript.

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## Conflicts of Interest

No conflicts of interest.

## References

- Akhmad, F. A. P. (2022). Efektivitas Pelaksanaan Supervisi Akademik Pengawas Dalam Meningkatkan Kompetensi Profesional Guru PAI SD di Kecamatan Tambun Selatan. *Jurnal Parameter*, 7, 45. <https://jurnal.stietribuana.ac.id/index.php/parameter/article/view/185/178>
- Alfitra, M. (2024). *Guru Geografi SMA Negeri 2 Kota Gorontalo*.
- Badjarad, S. (2024). *Guru Geografi MAN 1 Kota Gorontalo*.
- Budiana, I. (2021). Menjadi Guru Profesional di Era Digital. *JIEBAR: Journal of Islamic Education: Basic and Applied Research*, 02, 2. <https://doi.org/10.33853/jiebar.v2i2>
- Eko Wahyudi, L., Mulyana, A., Dhiaz, A., Ghandari, D., Putra Dinata, Z., Fitoriq, M., & Nur Hasyim, M. (2022). Mengukur Kualitas Pendidikan di Indonesia. *Journal of Education, Madrasah Innovation and Aswaja Studies (MJEMIAS)*, 1(1), 18–22. <https://doi.org/10.69966/mjemias.v1i1.3>
- Hidayah, N., & Mulyani, P. K. (2024). The Development of Raya-In: Learning Media Based on Smart Apps Creator to Improve Primary School Social Science Learning. *Jurnal Penelitian Pendidikan IPA*, 10(8), 5909–5918. <https://doi.org/10.29303/jppipa.v10i8.9062>
- Kuswanti, E., Sukatmi, S., Gaol, L. L., Suryani, P., & Robiansyah, A. (2024). Transforming in the Digital Era: Uncovering the Potential of Self-Reliance and Technology for the Success of New UT Students in Distance Learning. *Jurnal Penelitian Pendidikan IPA*, 10(8), 5919–5928. <https://doi.org/10.29303/jppipa.v10i8.8178>
- Lahabu, E. (2024). *Guru Geografi SMA Negeri 3 Kota Gorontalo*.
- Mansyur. (2024). *Guru Geografi SMA Negeri 1 Kota Gorontalo*.
- Mudarris, B. (2022). Profesionalisme Guru di Era Digital; Upaya dalam Meningkatkan Mutu Lembaga Pendidikan. *ALSYS*, 2(6), 712–731. <https://doi.org/10.58578/alsys.v2i6.640>
- Mufidah, L. I. (2019). Tantangan Profesionalisme Guru pada Era Globalisasi. *Jurnal LENTERA*, 18(2), 174–186. <https://doi.org/10.29138/lentera.v18i2.149>
- Muhsin. (2015). Pengembangan Profesionalisme Guru Dalam Menghadapi Era Globalisasi Dan Informasi. *FITRA Jurnal Pendidikan Islam*, 1(2), 21. <https://jurnal.staitapaktuan.ac.id/index.php/fitra/article/view/13>
- Muhson, A. (2004). Meningkatkan Profesionalisme Guru: Sebuah Harapan. *Jurnal Ekonomi Dan Pendidikan*, 2(1), 90. <https://doi.org/10.21831/jep.v1i2.665>
- Nata, A. (2023). Guru Profesional di Era Digital. *Abuddin.Lec.Uinjkt.Ac.Id*. <http://abuddin.lec.uinjkt.ac.id/articles/guru-profesional-di-era-digital>
- Nuryani, D., & Handayani, I. (2020, January). Kompetensi Guru di Era 4.0 dalam Meningkatkan Mutu Pendidikan. *Prosiding Seminar Nasional Pendidikan Program Pascasarjana Universitas PGRI Palembang*. <https://jurnal.univpgri-palembang.ac.id/index.php/Prosidingppps/article/view/3805>
- Qoshwa, G., & Rusydiyah, E. F. (2020). Profesionalisme Guru dalam Implementasi Teknologi di Madrasah. *Jurnal Tarbawi STAI Al Fithrah*, 9(1), 1–19. <https://jurnal.alfithrah.ac.id/index.php/tarbawi/article/view/138>
- Rahmawati, N. H. (2019). Profesionalisme Guru di Era Teknologi Disruptif. *ISOLEC Proceedings 2019*, 211. <http://isolec.um.ac.id/?p=501>
- Saerang, H. M., Lembong, J. M., Deity, S., Sumual, M., Marie, R., & Tuerah, S. (2023). Strategi Pengembangan Profesionalisme Guru di Era Digital: Tantangan dan Peluang. *El-Idare: Jurnal Manajemen Pendidikan Islam*, 9(1), 65–75. <https://doi.org/10.19109/elidare.v9i1.16555>

- Sakti, B. P. (2020). Upaya Peningkatan Guru Profesional Dalam Menghadapi Pendidikan di Era Globalisasi. *Attadib Journal Of Elementary Education*, 4(1), 2020. <https://doi.org/10.32507/attadib.v4i1.632>
- Seftiani, S., Sesrita, A., & Suherman, I. (2020). Pengaruh Profesionalisme Guru Terhadap Motivasi Belajar Siswa SD Negeri. *SITTAH: Journal of Primary Education*, 1(2). <https://doi.org/10.30762/sittah.v1i2.2486>
- Sugiyono. (2016). *Metode Penelitian Kuantitatif, Kualitatif dan R&D* (Cetakan 8). Bandung: Alfabeta.
- Sutiah, E. (2024). *Guru Geografi SMA Negeri 4 Kota Gorontalo*.
- Tekege, M. (2017). Pemanfaatan Teknologi Informasi Dan Komunikasi Dalam Pembelajaran SMA YPPGI Nabire. *Jurnal Teknologi Dan Rekayasa*, 2(1).