

INDONESIA'S FUTURE: A NEW EDUCATIONAL PARADIGM TO MEET THE CHALLENGES OF THE DIGITAL ERA 5.0

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ABSTRACT

Indonesia's new future educational paradigm in facing the challenges of digital era 5.0 should be able to see phenomena and make intelligent assessments of learning. There is a lack of understanding about policy makers regarding the dynamics of education in the development of the digitalization era. The reality of the phenomenon experienced in traditional education is that digital technology capabilities are less suited to current needs, so a new analysis is needed regarding the challenges of the rapidly developing digital era 5.0. This research aims to analyze the challenges of a new paradigm for Indonesia's future education which will later be useful for integrating manufacturing learning in the digital era 5.0. A literature review method using VOSviewer software was applied to obtain more accurate results. The collected data is analyzed according to a series of procedures such as topic identification, literature focus, source search, source quality assessment, and presentation of results. There are five research results, including: (1) Digital technology; (2) Digital competency; (3) Digital pedagogy; (4) Digital literacy; and (5) Digital platforms.

Keywords: *Indonesia's future education, Educational paradigm, Educational challenges, Digital era 5.0.*

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1. INTRODUCTION

Education aims to create a teaching and learning environment that produces desired changes for students (Manowaluilou, Nilsook, & Buasuwan, 2023). These changes can include increasing knowledge, skills, or influence on moral attitudes and principles (Anshori, Solikhah, Aqli, Musyafa', & Apriyanto, 2022). Educators are also seen as a set of knowledge and skills that improve teaching work with various strategies to optimize the success of students and educational institutions (Soares, 2020). Planning the full range of teaching events, including content, strategies, and other core components is a major factor in teaching and learning. This is done to ensure that students obtain the expected abilities (Malan, 2010).

According to the modern understanding, an "educated person" is a person who can read and write as a result of taking formal education from primary education to higher education (Muborakshoeva, 2019). Students' progress in new educational topics is based on the time spent to increase knowledge and insight for the benefit of sustainable future learning (Reigeluth, 2020). In the old paradigm of the world of education, learning which was often carried out face-to-face in school buildings was considered ineffective in this modern era. In the digital era of 5.0, students and teachers simply sit in front of laptops, computers, and other electronic devices wherever they are and

can provide knowledge according to their respective fields of expertise.

Based on the phenomena occurring in the world of education today, new paradigm challenges will emerge in Indonesia's future. This challenge will enable all parties involved in education to participate fully in developing new concepts and strategies that are deemed appropriate and can be implemented more effectively using digital technology. The open access paradigm can also show that the term openness has a broad meaning in the context of digitalization of the world of education (Kunst & Degkwitz, 2019). This of course raises new paradigm challenges, such as education no longer requiring school buildings or educational institutions which are usually used for gathering and interacting. In the near future, the challenges offered by new paradigms of future education may help integrate manufacturing learning into the environment (Mavrikios, Georgoulas, & Chryssolouris, 2019).

Not all of these things have a positive impact on students and related communities. As a result, new paradigm ideas emerged for future education in Indonesia which were considered more efficient and successful in implementation. The aim of education is to help every student realize his full and optimal potential so that he is able to make a real contribution to society with the greatest possible level of enjoyment and well-being (Faradila, Priantari, & Qamariyah, 2023). Dissatisfaction with education policies often leads to efforts to adapt education systems, practices, and strategies to best meet the needs of students in the digital 5.0 era.

2. REVIEW OF LITERATURE

2.1 Indonesia's Education

One of the most popular topics among academics and interested parties is the development of an excellent educational system (Karim, 2021). In order to build a strong educational system for its citizens' better future, Indonesia is now dealing with a number of obstacles. This essay looks at the issues with Indonesia's educational system (Arif & Maksum, 2017).

An overview of some of the professional associations for educators and researchers that are currently in existence in Indonesia. These associations are striving to create significant avenues for the dissemination of recent findings on innovative curricula, student learning, and teacher practice that could have a positive impact on education in the future (Faisal & Martin, 2019). The government ought to keep up the downward trend in poverty. The long-term effects of poverty, income inequality, and educational equality on economic growth are examined via future research dynamic models (Sabur, Khusaini, & Ramdani, 2021).

2.2 Educational Paradigm

The contemporary world is unique. Not one exception applies to our nation. Additionally, domestic schooling has changed. Furthermore, it is evident that relying solely on accepted theoretical and methodological guidelines does not always provide the intended outcome (Moklyak & Tarielko, 2023). The need to alter the paradigm in education is become increasingly pressing in this sense (Mukhin, 2021).

This essay adopts the stance that classrooms of the future should be transformed into safe harbors where students are afforded the opportunity to explore, deconstruct, and share knowledge of themselves, their experiences, and the world in which they live (Bodinet, 2016). It focuses on an educational paradigm rooted in critical pedagogy, the socratic method, future studies, and peace education. Regardless of the subject being taught, students should be active participants in a classroom setting where the professor guides understanding primarily as an individual contributor (Želvys, Dukynaitė, & Vaitekaitis, 2018).

2.3 Digital Era 5.0

Digital abilities are becoming crucial for determining both individual success and social advancement in this fast-paced, widely spread technology era (Achmad & Utami, 2023). A broad range of competencies are encompassed by digital skills, such as programming, data analysis, digital literacy, online collaboration, and information security (Ayu & Risdianto, 2023). Many studies have been conducted on digital skills in the field of education, with the use of blended learning to enhance digital skills ranking among the most researched subjects.

A new paradigm of digital technology and intelligent applications is heralded by the development of the digital intelligence age, which presents both possibilities and problems for engineering practice (Putri & Pandin, 2021). In order to develop engineers with complete competencies and multidisciplinary abilities, engineering education institutions must constantly adapt their curriculum and teaching techniques. The era of digital intelligence also presents new

opportunities for engineering education; transformational techniques will help raise the standard of engineering education while offering vital assistance for the environment's and society's sustainable development (Qiao & Fu, 2023).

3. RESEARCH METHODOLOGY

This research uses a literature review method with a library study research approach using VOSviewer software to obtain more accurate research findings (Bukar et al., 2023). Combining theories and viewpoints from many empirical findings, a literature review can answer research questions with the power that no single study has. Additionally, literature reviews are an excellent way to find evidence on a meta-level and to uncover areas that need more research which is an important component in creating a theoretical framework and building a conceptual model (Snyder, 2019).

A literature review can also be an appropriate research methodology like other research where appropriate steps need to be taken and actions taken to ensure the assessment is accurate, precise, and trustworthy (Taherdoost, 2023). Like all research, the value of an academic review depends on what was done, what was found, and the clarity of the reporting (Moher et al., 2009). There are several research stages that must be carried out, including; topic identification, literature focus, source search, source quality assessment, and finally presentation of results. This literature review will later be synthesized using a narrative presentation by grouping data from the focus of the literature which has been taken from several searches of certain sources which have been assessed

as having good source quality, and then the results of the research will be presented.

4. RESULTS AND DISCUSSION

Based on the stages of the research process that have been carried out, several research results can be obtained, including; First, the challenge of the new educational paradigm with distance learning or what is usually called distance learning. Second, challenging the new paradigm of education by implementing modern teaching or digital pedagogy which is considered much more effective than current traditional pedagogy. The final research result is the third, the challenge of a new educational paradigm which is strongly supported by the role of the students' families themselves. These three research results are an initiative to think about a new educational paradigm for the future of Indonesia in the digital era 5.0 which has been reviewed with various reinforcements through trusted and valid sources in the form of literature studies. Analysis of the new paradigm for Indonesia's future education is seen in Figure 1. Based on the results of bibliometric network analysis and visualization in VOSviewer, digital technology is the main key in the new paradigm of Indonesian education with the existence of learning innovations that are able to support the success of educational challenges such as the implementation of best practices, strategies, and solutions.

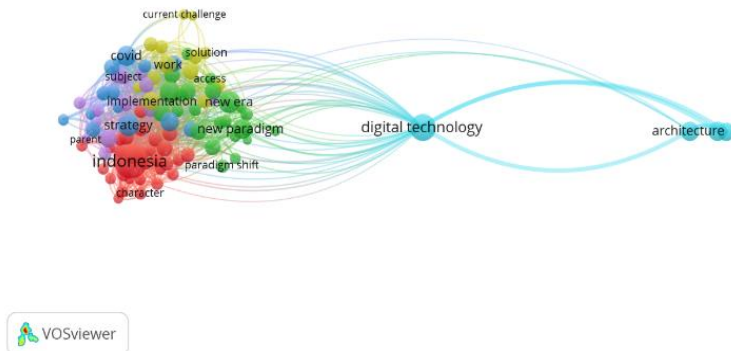


Figure 1. Analysis of New Paradigm for Indonesia's Education

For more details regarding the findings of the analysis of the new paradigm of education related to the digital era 5.0 as seen in Figure 2. Based on Figure 2, the digital era 5.0 education paradigm includes digital technology, digital competence, digital pedagogy, digital literacy, and digital platforms. Each person has their own paradigm based on their life experiences. Living with a particular paradigm is like looking through the same door. Every time you look through the door you will get the same view and destination. In many cases thinking with a paradigm is better than having no paradigm view at all. This paradigm shift, especially in the world of education, is like finding a new door that can later be entered and explored the contents within. Through the wide open new door, everything that is visible is something new or old things can be seen from a different perspective and become much more interesting and colorful.

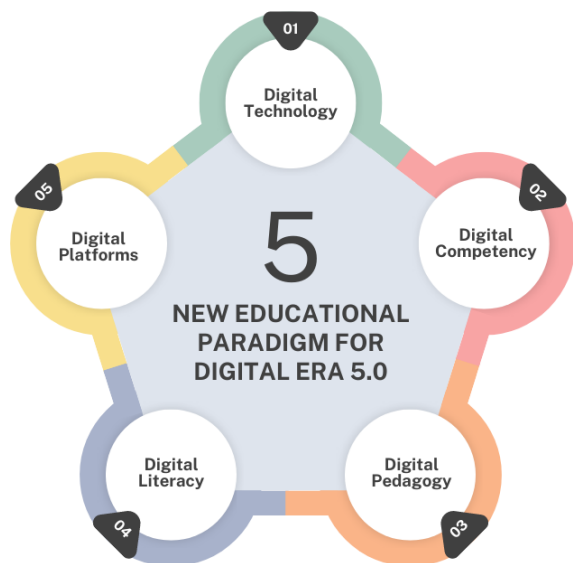


Figure 2. New Educational Paradigm for Digital Era 5.0

The old educational paradigm assumes that when the teaching and learning process takes place it must be carried out in a school building that has classrooms in it so that students can carry out learning activities together with teachers as teaching staff at certain educational institutions. However, when Indonesia faced the digital 5.0 era, new paradigms emerged regarding the world of education which became challenges for both teaching staff and students. This requires all education stakeholders to be able to provide new strategies for the continuity of learning that no longer use school buildings as a place for education. Learning will later focus on life skills as a form of change in the educational paradigm and reconstruction of education in Indonesia. With a new paradigm, the mindset

becomes fresher and will be even better if it is owned (Atnan, 2015).

4.1 Digital Technology

The challenge for Indonesia's new future education paradigm is the implementation of the use of digital technology in every teaching and learning activity in the school environment and outside the school environment. Learning by using digital technology can build collaborative classes to encourage students' motivation and interest in learning (Hidayat, Anisti, Purwadhi, & Wibawa, 2020). This was done when the crisis situation in the education sector prompted the Indonesian government to issue policies tailored to the needs of students in implementing digital technology to maximum ('Alam, Sobri, & Sunandar, 2023). All kinds of learning processes often utilize digital technology, because it is considered very profitable (Indrowaty & Faizah, 2021).

Digital technology has become an important instrument in achieving future educational goals in Indonesia. The use of technology today means that someone can easily identify the source of information and can stop further negative impacts from occurring. Digital technology aims to increase productivity and efficiency while reducing or eliminating negative things that might occur (Haleem, Javaid, Qadri, & Suman, 2022). The nature and reach of education have changed as a result of digital technology which can be felt directly. As for information and communication technology strategies and policies, they can be well integrated, so they have been widely adopted by educational institutions throughout the world (Timotheou et al., 2023).

Implementation of digital technology can be done through offline or online learning using various chat or video conferencing applications as well as other applications and software to support the learning process. Digital technology applied in the world of education is currently becoming more effective as a learning method for students who still want to continue their learning activities in the digital era 5.0 (Faraasyatul 'alam, Imron, Supriyanto, & Mustiningsih, 2023). Like it or not, whether we like it or not, this new paradigm must continue to be implemented well considering that there are still many students who want to continue their education. This requires good cooperation between teachers and students in their activities.

4.2 Digital Competency

The challenges of a new paradigm with the application of increasingly sophisticated technological tools have been brought about by global changes, including in the world of education (Syahid, Hernawan, & Dewi, 2022). To balance the progress of education in the digital 5.0 era, it is certainly necessary to improve teacher quality, one of which is increasing teacher digital competence. To complete their duties, a teacher must have digital-based competencies in carrying out learning activities effectively and efficiently. Teachers must master various approaches, strategies, and digital media related to learning in the current digital 5.0 era because students are actively and quickly able to adapt to modern technology. If teachers are unable to balance the use of technology in learning, then students will have big problems in the future. To achieve effective and efficient learning outcomes in the current

digital 5.0 era, teachers must have digital competence (Sitompul, 2022).

The world of education faces extraordinary future challenges, especially for teachers' professional digital competency readiness in adapting to advances in information and communication technology through teaching practice activities (Prasetyo, Sari, Rahmawati, & Pambudi, 2022). The digital era 5.0 revolution occurred which brought more sophisticated advances in technology and science, so this was able to produce a lot of information that could be accessed quickly and could help someone develop their potential, including in the world of education, especially in the learning process. Digital literacy, especially for teachers, has many benefits, such as getting information, uploading work results, and creating digital media. The goal of digital literacy in this era is for teachers to become more familiar with technology, make their work easier, and expand students' knowledge (Wardhana, 2020).

4.3 Digital Pedagogy

The new educational paradigm is of course implemented by utilizing a number of technologies, both information technology and communication technology, which of course will result in changes in pedagogy. Starting from traditional pedagogy which has long been applied by all fields of education, it will develop into a more modern pedagogy, namely, digital pedagogy ('Alam, Wiyono, Burhanuddin, & Muslihati, 2023). The challenges of this new paradigm with digital pedagogy will be able to influence the teaching styles and strategies of teachers as educators by utilizing various digital learning resources and the use of modern technology which is currently developing rapidly.

Educators who can master digital pedagogy will find it easier to attract students' attention when teaching and learning activities take place in the classroom or virtual learning environment. Students will appear much more active in the online learning process with the application of several educational technology innovations. Educators can also instill ethics and norms related to the use of information technology and communication technology in students so that knowledge and morals can be properly instilled (Alam, Wiyono, Burhanuddin, & Muslihati, 2023).

Digital pedagogy must use today's modern tools to enhance the teaching and learning experience. This offers the possibility of more interaction between students and instructors to increase students' academic success (Sadiku, Omotoso, & Musa, 2019). Educators who incorporate digital teaching in the classroom will indirectly be able to recreate the contemporary world that their students face every day. This increase has encouraged confidence in integrating digital pedagogy in the implementation of best practices and subsequent teaching practices (Sailin & Mahmor, 2018).

4.4 Digital Literacy

Digital literacy is part of basic literacy used in learning activities along with reading, writing, numeracy, science, culture, and citizenship literacy (Aini & Nuro, 2023). Another new educational paradigm that can be applied in the digital 5.0 era is the challenge of digital literacy of the current generation of students. Education in all kinds of fields really needs digital literacy, especially in this era of technology, because scientific insight is one of the most important pillars for forming personal

character (Mulyani, 2019). The initial formation of the character of Indonesian children as the next generation who will continue the competition in the future is the foundation for successful education through digital literacy in the school environment and outside the school environment.

Among several findings that must be known is that the roles determined by educators lie in two dimensions that are quite clear. Firstly, in the field of education through completing tasks from educational institutions given to students and secondly, instilling habits and facilitating the formation of student development that supports learning. The role of digital literacy has been identified as an important influence where there is still limited understanding of the world of education (Martin, Simmons, & Yu, 2014).

There are six important elements such as information literacy, digital learning, growth of digital literacy, information, and communication technology, social media, and 21st-century digital skills that are characteristic of future education. These elements can be divided into three main categories, including digital learning, digital literacy, and digital skills for the 21st century (Audrin & Audrin, 2022). This study can certainly provide a digital literacy paradigm in education as well as a direction for a brighter future for the nation.

4.5 Digital Platforms

The challenge of a new paradigm with the implementation of digital platforms in the current era of modern technology is one of the solutions offered to simplify the learning process (Gawer, 2022). Digital platforms in the world of education certainly have

two options that can be applied, such as online learning or learning carried out on the Internet network and offline learning or learning carried out outside the Internet network. Teachers can combine these two things when teaching students using digital platforms from related educational institutions according to the level of education they are taking.

When developing and applying information technology and network technology in education, learning using modern technology has become a new digital platform in the world of education using networks which have become an effective complement to teaching (Zhang & Qiao, 2010). Including how teaching staff can effectively interact with students to improve the quality of learning is also becoming more of a concern (Burhanuddin & Supriyanto, 2018). Based on the discussion regarding the distributed cognitive perspective in learning during the digital transformation period, certain teaching strategies will be very helpful, especially with the current conditions in Indonesia. Of course, students must be able to immediately adapt to the challenges of this new paradigm to create an even better education.

5. CONCLUSION AND LIMITATIONS

The conclusion that can be drawn from this scientific study is that the old paradigm of education, such as the existence of school buildings, the use of traditional pedagogy, and the role of the family, is changing direction towards a new paradigm of education, except for the role of the family. The new educational paradigm includes digital technology, digital competence, digital pedagogy, digital literacy, and digital platforms which are considered very effective in the digital 5.0

era. Recommendations that can be given to future researchers include creating new paradigms for future education in Indonesia that are appropriate and suitable to be applied to the challenges of digital era 5.0 and it is hoped that they can be used as guidelines for the national education system.

REFERENCES

- 'Alam, G. F., Sobri, A. Y., & Sunandar, A. (2023). Higher Education Standard Policy with Effectiveness of Using E-Module Through Learning Management System. In *Proceedings of the International Conference on Educational Management and Technology (ICEMT 2022)*. https://doi.org/10.2991/978-2-494069-95-4_34
- 'Alam, G. F., Wiyono, B. B., Burhanuddin, & Muslihati. (2023). *Integration of Digital Pedagogy for Teacher Internship Program through E-Training to Realize Smart Society*. https://doi.org/10.2991/978-2-38476-156-2_19
- Achmad, W. K. S., & Utami, U. (2023). Sense-making of Digital Literacy for Future Education Era: A Literature Review. *Jurnal Prima Edukasia*, 11(1). <https://doi.org/10.21831/jpe.v11i1.52911>
- Aini, D. F. N., & Nuro, F. R. M. (2023). Analisis Kompetensi Literasi Digital Guru sebagai Pendukung Keterampilan Guru Sekolah Dasar. *Jurnal Basicedu*, 7(1). <https://doi.org/10.31004/basicedu.v7i1.4744>
- Alam, G. F., Wiyono, B. B., Burhanuddin, & Muslihati. (2023). Ethics of Using Digital Technology with E-Training among Computer Science Students Internship Program for a Resilient Future. *Proceedings - International Conference on Education and Technology, ICET*. <https://doi.org/10.1109/ICET59790.2023.10435257>
- Anshori, A., Solikhah, N. A., Aqli, D. R., Musyafa', M. A., & Apriyanto, S. (2022). Dynamics and New Paradigm of Islamic Education in Indonesia. *Scaffolding: Jurnal Pendidikan Islam Dan Multikulturalisme*, 4(2). <https://doi.org/10.37680/scaffolding.v4i2.1573>

- Arif, A., & Maksum, I. R. (2017). Functional Decentralization Construct in Decentralization Policy in Indonesia (A study of Irrigation, Education, and Free trade sectors). *JKAP (Jurnal Kebijakan Dan Administrasi Publik)*, 21(1). <https://doi.org/10.22146/jkap.25383>
- Atnan, N. (2015). Paradigma Penelitian Kualitatif. *Penelitian Uniiversitas Indonesia*.
- Audrin, C., & Audrin, B. (2022). Key factors in digital literacy in learning and education: a systematic literature review using text mining. *Education and Information Technologies*, 27(6). <https://doi.org/10.1007/s10639-021-10832-5>
- Ayu, F. B., & Risdianto, E. (2023). Bibliometric Analysis: Application of Blended Learning in the Development of Digital Skills in the Era of Digital Education. *JENTIK : Jurnal Pendidikan Teknologi Informasi Dan Komunikasi*, 2(2). <https://doi.org/10.58723/jentik.v2i2.226>
- Bodinet, J. C. (2016). Pedagogies of the futures: Shifting the educational paradigms. *European Journal of Futures Research*, 4(1). <https://doi.org/10.1007/s40309-016-0106-0>
- Bukar, U. A., Sayeed, M. S., Razak, S. F. A., Yogarayan, S., Amodu, O. A., & Mahmood, R. A. R. (2023). A method for analyzing text using VOSviewer. *MethodsX*, 11. <https://doi.org/10.1016/j.mex.2023.102339>
- Burhanuddin, B., & Supriyanto, A. (2018). The Use of TQM as A Model to Improve University Performance in Indonesia. *International Research-Based Education Journal*, 1(2). <https://doi.org/10.17977/um043v1i2p108-114>

- Faisal, & Martin, S. N. (2019). Science education in Indonesia: Past, present, and future. *Asia-Pacific Science Education*, 5(1). <https://doi.org/10.1186/s41029-019-0032-0>
- Faraasyatul 'alam, G., Imron, A., Supriyanto, A., & Mustiningsih. (2023). Paradigma Pendidikan Era Learning Society 5.0: Model STEAM sebagai Internasional Best Practice dalam Smart Education. *Proceedings Series of Educational Studies Prosiding Seminar Nasional "Peran Manajemen Pendidikan Untuk Menyiapkan Sekolah Unggul Era Learning Society 5.0" Departemen Administrasi Pendidikan Fakultas Ilmu Pendidikan*.
- Faradila, A., Priantari, I., & Qamariyah, F. (2023). Teaching at The Right Level sebagai Wujud Pemikiran Ki Hadjar Dewantara di Era Paradigma Baru Pendidikan. *Jurnal Pendidikan Non Formal*, 1(1). <https://doi.org/10.47134/jpn.v1i1.101>
- Gawer, A. (2022). Digital platforms and ecosystems: remarks on the dominant organizational forms of the digital age. *Innovation: Organization and Management*, 24(1). <https://doi.org/10.1080/14479338.2021.1965888>
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3. <https://doi.org/10.1016/j.susoc.2022.05.004>
- Hidayat, D., Anisti, Purwadhi, & Wibawa, D. (2020). Crisis management and communication experience in education during the covid - 19 pandemic in indonesia. *Jurnal Komunikasi: Malaysian Journal of Communication*. <https://doi.org/10.17576/JKMJC-2020-3603-05>

-
- Indrowaty, S. A., & Faizah, N. (2021). The Implementation of Project-Team Based Learning Method on Sakubun Online Learning. *EDUCATIO: Journal of Education*, 6(2).
- Karim, S. A. (2021). Mapping the Problems of Indonesia's Education System: Lessons Learned from Finland. *Tell: Teaching of English Language and Literature Journal*, 9(2). <https://doi.org/10.30651/tell.v9i2.9368>
- Kunst, S., & Degkwitz, A. (2019). Open Science-the new paradigm for research and education? *Information Services and Use*, Vol. 38. <https://doi.org/10.3233/ISU-180014>
- Malan, S. (2010). The "new paradigm" of outcomes-based education in perspective. *Journal of Family Ecology and Consumer Sciences /Tydskrif Vir Gesinsekologie En Verbruikerswetenskappe*, 28(1). <https://doi.org/10.4314/jfec.v28i1.52788>
- Manowaluilou, N., Nilsook, P., & Buasuwan, P. (2023). Perceptions and the new paradigm of Thai vocational education. *International Journal of Innovation and Learning*, 33(3). <https://doi.org/10.1504/IJIL.2023.130101>
- Martin, J. P., Simmons, D. R., & Yu, S. L. (2014). Family roles in engineering undergraduates' academic and career choices: Does parental educational attainment matter. *International Journal of Engineering Education*.
- Mavrikios, D., Georgoulas, K., & Chryssolouris, G. (2019). The Teaching Factory Network: A new collaborative paradigm for manufacturing education. *Procedia Manufacturing*, 31. <https://doi.org/10.1016/j.promfg.2019.03.062>

- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., Altman, D., Antes, G., ... Tugwell, P. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of Internal Medicine*. <https://doi.org/10.7326/0003-4819-151-4-200908180-00135>
- Moklyak, V., & Tarielko, S. (2023). Concept and Content of Educational Paradigm. *Pedagogical Sciences*, (81). <https://doi.org/10.33989/2524-2474.2023.81.289409>
- Muborakshoeva, M. (2019). Challenges in higher education and the role of Muslim cultures and civilisations in developing a new paradigm in education. *Revista Espanola de Educacion Comparada*, 33(33), 62–77. <https://doi.org/10.5944/reec.33.2019.22328>
- Mukhin, M. I. (2021). On the pivotal basis of the educational paradigm of the 21st century. *Perspektivy Nauki i Obrazovania*, 50(2). <https://doi.org/10.32744/PSE.2021.2.4>
- Mulyani, S. (2019). PERAN IBU DALAM PENDIDIKAN KARAKTER ANAK MENURUT PANDANGAN ISLAM. AN-NISA. <https://doi.org/10.30863/annisa.v11i2.336>
- Prasetyo, W. H., Sari, B. I., Rahmawati, N., & Pambudi, G. (2022). Peningkatan Kompetensi Digital bagi Guru Muhammadiyah dalam Menghadapi Society 5.0. *Warta LPM*. <https://doi.org/10.23917/warta.v25i1.601>
- Putri, R. E., & Pandin, M. G. R. (2021). Analyzing The Importance of Character Education for Millennial Generations in The Digital Era. *Preprints*, (June).
- Qiao, W., & Fu, J. (2023). Challenges of Engineering Education in the Digital Intelligence Era. *Journal of Educational*

- Technology Development and Exchange*, 16(2).
<https://doi.org/10.18785/jetde.1602.09>
- Reigeluth, C. M. (2020). Technology and the New Paradigm of Education. *Contemporary Educational Technology*, 1(1), 84–86. <https://doi.org/10.30935/cedtech/5963>
- Sabur, A., Khusaini, K., & Ramdani, H. C. (2021). Education Equality and Economic Growth in Indonesia. *JEJAK*, 14(1). <https://doi.org/10.15294/jejak.v14i1.26162>
- Sadiku, M. N. O., Omotoso, A., & Musa, S. M. (2019). Digital Pedagogy. *International Journal of Trend in Scientific Research and Development*.
<https://doi.org/10.31142/ijtsrd21490>
- Sailin, S. N., & Mahmor, N. A. (2018). Improving student teachers' digital pedagogy through meaningful learning activities. *Malaysian Journal of Learning and Instruction*.
- Sitompul, B. (2022). Kompetensi Guru dalam Pembelajaran di Era Digital. *Jurnal Pendidikan Tambusai*, 6(3).
<https://doi.org/10.31004/jptam.v6i3.4823>
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*.
<https://doi.org/10.1016/j.jbusres.2019.07.039>
- Soares, L. (2020). Awakening Teacher Leaders: a New Paradigm in Education for School and Student Success. *PUPIL: International Journal of Teaching, Education and Learning*, 4(2), 96–106.
<https://doi.org/10.20319/pijtel.2020.42.96106>
- Syahid, A. A., Hernawan, A. H., & Dewi, L. (2022). Analisis Kompetensi Digital Guru Sekolah Dasar. *Jurnal Basicedu*, 6(3). <https://doi.org/10.31004/basicedu.v6i3.2909>

- Taherdoost, H. (2023). Towards Nuts and Bolts of Conducting Literature Review: A Typology of Literature Review. *Electronics (Switzerland)*, Vol. 12. <https://doi.org/10.3390/electronics12040800>
- Timotheou, S., Miliou, O., Dimitriadis, Y., Sobrino, S. V., Giannoutsou, N., Cachia, R., ... Ioannou, A. (2023). Impacts of digital technologies on education and factors influencing schools' digital capacity and transformation: A literature review. *Education and Information Technologies*, 28(6). <https://doi.org/10.1007/s10639-022-11431-8>
- Wardhana, W. S. (2020). Strategi Pengembangan kompetensi guru secara mandiri di era literasi digital. *Strategi Pengembangan Kompetensi Guru Secara Mandiri Di Era Literasi Digital*, (4).
- Želvys, R., Dukynaitė, R., & Vaitekaitis, J. (2018). Effectiveness and efficiency of educational systems in a context of shifting educational paradigms. *Pedagogika*, 130(2). <https://doi.org/10.15823/p.2018.20>
- Zhang, X. Y., & Qiao, A. L. (2010). Research on promoting the intervention of teachers and learners in Virtual Learning Community-In view of Distributed Cognition. *2nd International Conference on Information Science and Engineering, ICISE2010 - Proceedings*. <https://doi.org/10.1109/ICISE.2010.5689521>.