



The New Paradigm of Leadership at Elementary Schools in Borneo in the Industrial Revolution 4.0 Era

Rizky Amelia¹, Ahmad Suriansyah², Aslamiah³, Ngadimun⁴

Universitas Lambung Mangkurat

Email: ¹rizkyamelia@ulm.ac.id, ²a.suriansyah@yahoo.co.id, ³aslamiah@ulm.ac.id,

⁴ngadimun@ulm.ac.id

The school headmaster as a leader in schools is required to have digital skills, as required of both technical and managerial workers in all fields during the Industrial Revolution 4.0 era. This study uses a qualitative method that aims to determine and describe the leadership of headmasters in the era of the Industrial Revolution 4.0 in elementary schools in the city of Banjarmasin. Data collection using interviews, observation, and documentation techniques was conducted. Study results from several elementary schools showed that there was an increase in the need for analytical non-routine skills and interactive non-routine skills, whereas the needs of cognitive routine, non-routine manual and manual routine skills have decreased. The headmaster's leadership, following the development of technology, must exhibit skills in influencing, encouraging, guiding, directing, and moving others who are related to the implementation and development of education and teaching in the era of Industrial Revolution 4.0.

Keywords: *Industrial Revolution 4.0, leadership, headmaster.*



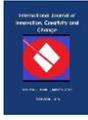
Introduction

Every individual wants to be led by a leader who can guide and direct to achieve better goals. The term leader comes from the word "lead" (in English lead) meaning guidance. Therefore, there are two parties involved, those who are "led" and those who "lead". Etymologically the leader is a person who can influence and persuade other parties to take action to achieve a common goal (Amin & Siregar, 2015). A leader is someone who has the ability and responsibility to be able to guide, control and influence others to act for improved benefit of all. Headmasters, as leaders in schools, must provide appropriate support for improving teacher performance and learning success in the classroom (Aslamiah, 2019).

Consequently, along with the development and changing times since Industrial Revolution 4.0, changes in human behavior and behavior change from time to time. This circumstance also changes the development of the global education system, and Indonesia in particular (Risdianto, 2019). The desired education system is one that can lead to a better human civilization. To achieve this, the necessity is for a leader with the capability to make this happen. The development of education in the world today cannot be separated from the development of the industrial revolutions that have occurred because indirectly, changes in the economic order also change the educational order in a country. At present, the world is entering the Industrial Revolution 4.0.

Industrial Revolution 4.0 is characterized by an increase in digitalization of manufacturing driven by four factors: 1) an increase in data volume, computational power, and connectivity; 2) the emergence of analysis, capabilities, and business intelligence; 3) the occurrence of new forms of interaction between humans and machines; and 4) improvement of digital transfer instructions to the physical world, such as robotics and 3D printing (Schwab, 2017). The basic principle of Industry 4.0 is the integration of machines, workflows, and systems, by implementing intelligent networks along the chain and production process to control each other independently (Ghufron, 2018).

The Industrial Revolution Era 4.0 is marked by artificial intelligence, supercomputers, genetic engineering, nanotechnology, automatic cars, and innovation. These changes have occurred at exponential speed which impacts on economy, industry, government and politics. In this era, the concept of the global village has become more visible (Satya, 2018). The Industrial Revolution 4.0 is a term that was coined for the first time in Germany in 2011, which was then marked by a digital revolution. The type of industry under discussion is a digitally connected industrial process that includes various types of technology, ranging from 3D printing to robotics which is believed to be able to increase productivity. Prior to this, there have been three industrial revolutions marked by the invention of the steam engine and railroad in 1750-1930, the invention of electricity

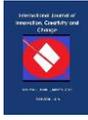


communication equipment, chemistry, and oil in 1870-1900, and the invention of computers, the internet, and mobile phones from 1960 to the present (Sommer, 2015). The Minister of Research, Technology and Higher Education of Indonesia states that the challenges of the Industrial Revolution 4.0 must be responded to quickly and appropriately by all stakeholders in order to increase the competitiveness of the Indonesian nation in the global market.

The Minister of Research, Technology and Higher Education of Indonesia explains, based on the initial evaluation of the country's readiness in facing the industrial revolution 4.0, that Indonesia is a country with high potential (Rohida, 2018). Although still below Singapore, in the Southeast Asia context, when Indonesia's position was taken into account in the global competitiveness index, World Economic Forum (2017-2018), Indonesia ranks 36th, up five ranks from the previous year at 41st position out of 137 countries (Mukhlisin, 2019). Based on the results of an Indonesian Poll conducted in collaboration with the Indonesian Internet Service Providers Association (APJII), the number of internet users in Indonesia grew during this time by 10.12 percent. According to the Secretary-General of APJII, Henri Kasyfi, this survey involved 5,900 samples with a margin of error of 1.28 percent. This field data was taken during the period from March to April 14, 2019. The result (Henri) was that of the total population of 264 million people in Indonesia, there were 171.17 million people or around 64.8 percent who had been connected to the internet. This figure increased from 2017 when the internet penetration rate in Indonesia was 54.86 percent. "From year to year our numbers continue to rise", from here we can illustrate that the proximity of the community is very high with one of the technology products in the form of internet networks (Susilo & Putranto, 2017).

The era of the industrial revolution 4.0 has changed the concept of work, job structure, and competencies needed by the world of work (Wollschlaeger, Sauter, & Jasperneite, 2017). An international recruitment company survey, Robert Walters, titled *Salary Survey 2018* states that the focus on business transformation to a digital platform has triggered demand for professional human resources (HR) who have competencies that are far different to those previously required. The era of the industrial revolution 4.0 also changed the perspective of education. Changes made are not just ways of teaching, but are far more essential, namely changes in the way of viewing the concept of education itself (Puncreobutr, 2016).

Furthermore, the Minister of Education and Culture of Indonesia, substantiated that the capital needed to enter the 21st century and master the industrial revolution 4.0 involves: 1) students have the ability to think critically; 2) students create and have innovative abilities; 3) students have the ability and communication skills; 4) students have the ability to cooperate and collaborate; and 5) students have confidence (Ahmad, 2018). Leadership in organizations play a very big role in building relationships between individuals and the formation of organizational values that serve



as the basic foundation for achieving organizational goals. The influence of leadership on organizational effectiveness can be seen as both a direct and indirect leadership effect (Hasan Baharun, 2017).

Educational leadership, in this case, the headmaster, is not always a person who can run but rather the emphasis is on providing policies for all needs that are part of the existence of the institution he/she leads (Lasno, Suriansyah, & Saleh, 2019). The demands of the community are of course that schools can deliver their students to compete in the world of society and work. While global needs tend to lead education products to be able to compete in the world of work globally.

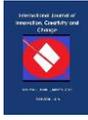
The headmaster in a school can be interpreted as the school leader or institution where he/she receives and gives lessons. The headmaster is a teacher who can lead all the resources that exist in a school so that it can be maximally utilized to achieve shared goals (Triyanto, Anitah, & Suryani, 2013). Furthermore, the headmaster, experienced in carrying out these main tasks provides and facilitates as relevant ease of speed, convenience, accuracy and integration in providing performance services (Baharuddin, 2012). The more work experience a person has, the more benefits on the impact of breadth of knowledge and insight in the associated work field and the increasing skills of colleagues.

The reality that occurs in elementary schools in Banjarmasin City, Borneo, is that headmasters have not been able to stimulate intellectuals, inspire, and motivate. A headmaster should be someone who inspire teachers to develop curriculum and exerts influence so that teachers develop learning practices that focus on customers by increasing their ability to manage classes, or develop learning methods through action research or innovative ideas. Headmasters are often charged with tasks that can be delegated to representatives, especially related to administration. The headmasters are responsible for improving school efficiency by bringing change to encourage improvement in student achievement in the industrial revolution era 4.0 (Niqab, Sharma, Wei, & Maulod, 2014). As a result of deficits in educational leadership, the quality of learning process is still far from expectations.

Based on the description in the previous section, the objectives of this study are to explain:

1. the headmaster's leadership style
2. the headmaster's leadership expectations during the Industrial Revolution 4.0 era in the city of Banjarmasin, Borneo.

The identification of the Industrial Revolution 4.0 term originated from a project initiated by the German government to promote the computerization of manufacturing (Sommer, 2015). Germany was the first country to make a roadmap (grand design) about the implementation of the digital



economy. In Indonesian, the term disruption is defined as uprooted from its origins however disruption is also interpreted as innovation (Kasali, 2018). In the context of Industrial Revolution 4.0, disruption can be interpreted as a fundamental change in innovation. In this era of disruption, fundamental changes occur because of massive changes in society in the field of technology in every aspect of community life. Thus, in context of the explanation above, the leadership figure needed in this era is an able leader who quickly adapts to the rapid changes that occur. Also, the attribute essential for leaders in this era is that they are visionary. Visionary implies insight in forward thinking and so a visionary leader is a leader who has the ability and insight to think ahead. Visionary leaders must, of course, have an optimistic attitude and a fighting spirit.

Characteristic of the era of disruption, as explained by VUCA, changes that occur are massive, fast, in a pattern that is difficult to guess (volatility) and rapid, causing uncertainty (uncertainty) and a consequent complexity in relationships between factors that are the cause of change (complexity) and the lack of clarity in the direction of change that causes ambiguity (ambiguity). In this era, information technology has become the basis of human life, including in the field of education in Indonesia, even as the world currently enters the era of the Industrial Social Revolution 5.0. During the Industrial Revolution 4.0 era, unlimited computing and data technology has become available due to the development of the internet and digital technology as a massive backbone of the movement and connectivity of humans and machines (Wollschlaeger et al., 2017). This era will also disrupt various human activities, including the fields of science and technology (science and technology) and higher education. With the challenges above, a leader is needed who can be brave and who is able to read opportunities for all changes that occur as a result of the Industrial Revolution 4.0.

Industrial Revolution 4.0 involves the integration of the Cyber-Physical System (CPS) and the Internet of Things and Services (IoT and IoS) into industrial processes including manufacturing and logistics and other processes (Kagermann, Hellinger, & Wahlster, 2013). CPS is a technology to combine the real world with the virtual world. The term Industry 4.0 was born from the idea of the fourth industrial revolution. The year of 2011 marked the first official use of the term Industry 4.0. Publicity and demonstrations of how this could benefit the company began to appear. In 2013, the German manufacturing industry chose to invest in Industrial Revolution 4.0 processes and the German government increased funding to this sector initiating the Industrial Revolution 4.0 Platform.

In 2014 manufacturing activities began to occur in digital products and the use of power stations. Workers in all fields during the Industrial Revolution 4.0 era were now required to have digital skills, both technical and managerial workers. In addition to the demands of appropriate skills, it is apparent that social skills are also very necessary in working in this era. The results of studies



in several developed countries show that there is an increase in the need for analytical non-routine skills and interactive non-routine skills. Whereas the needs of cognitive routine, non-routine manual, and manual routine skills have decreased (Schwab, 2017).

Leadership which is derived from the word "leader" defines that a leader is the person who leads. While leadership is key to a headmaster position, in another sense, etymologically, the term leadership comes from the basic word "lead" which means guidance. From "lead" was born the word labor "leaders" which means guided and demanding. Leadership is thus about setting direction and inspiring others to make the journey to a new and improved state of, in this case, a school (Normianti, Aslamiah, & Suhaimi, 2019). A headmaster's leadership is all about managing leaders and inspiring others to do work on something new and advancing school organization (Suriansyah, 2017).

Method

The approach used in this research is a qualitative descriptive approach. Qualitative research necessitates that researchers are involved in the study and describe the forms of events that occur on the object of research (Creswell & Poth, 2017). A qualitative approach orientates towards nature and natural phenomena (Amelia, 2017). This qualitative research requires researchers to conduct a thorough and focused exploration to gain a clearer and deeper understanding of the object under study. In connection with the collection of data to provide a description or affirmation of a concept or phenomenon, it also answer questions related to the research subjects.

This research was conducted in the Elementary Schools in Banjarmasin City. The required data is in the form of information about the activities of headmasters in Banjarmasin City Elementary Schools as a basis for investigating the leadership of headmasters who follow technological developments and the relevant associated skills in influencing, encouraging, guiding, directing, and mobilizing other people related to the implementation and development of education and teaching in the era of Industrial Revolution 4.0.

Research Results and Discussion

The Industrial Revolution 4.0 is very different from the previous Industrial Revolution 5.0 and in the Banjarmasin Elementary Schools changes occur in nanotechnology coupled with everything in the world that is connected to the Internet. In this era, everything becomes transparent and the difference between one product/service and another will be seen clearly and only the best will survive. The Government of Indonesia is currently implementing strategic steps determined based on the Making Indonesia 4.0 road map. This effort intends to accelerate the realization of the

national vision which is to take advantage of opportunities in the era of the fourth industrial revolution. One of the visions for the preparation of Making Indonesia 4.0 is to make Indonesia among the top 10 countries that have the strongest economy in the world by 2030 (Satya, 2018).

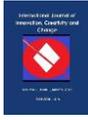
Improving the quality of human resources (HR) is one of the 10 priorities in implementing the Making Indonesia 4.0 program as HR is important to achieve its successful implementation. Indonesia plans to overhaul the education curriculum with more emphasis on STEAM (Science, Technology, Engineering, the Arts, and Mathematics), aligning the national education curriculum with future industrial needs. Indonesia will work with industry players and foreign governments to improve the quality of vocational schools while improving the global labor mobility program to utilize the availability of human resources in accelerating the transfer of abilities (De la Garza & Travis, 2018). The above is a form of response from the Indonesian government in the face of the industrial revolution 4.0. In the case of the headmaster then, a good program must be delivered with assertiveness and courage to realize and operate it efficiently, it is imperative not to a well conceptualized program to fall short in implementation, as in the case where deliver is a mere formality of compliance.

The focus of 21st Century Education in terms of desired graduate expertise is focused on the 4Cs: creativity, critical thinking, communication and collaboration as depicted in Figure 1 below.

Figure 1. 21st Century Skills



Communication is an activity that transfers information both orally and in writing. However, not everyone can communicate well. Sometimes some people can convey all information verbally but not in writing or vice versa. Humans are social creatures who always interact with each other, therefore, communication is one of the most important things in human civilization. The main purpose of communication is to send messages through the selected medium so that they can be understood by the recipient of the message. Effective communication occurs when something (message) that is conveyed by the communicator can be received as intended by the communicant, so there is no misperception. For communication between humans to be effectively intertwined, requires proper communication techniques. Communication techniques are the method used in



conveying information from communicator to communicant within certain media and the expectation is that everyone can effectively communicate with as appropriate.

Collaboration is the ability to collaborate or work together, adapt to various roles and responsibilities and entails the following: work productively with others; put empathy in its place; respect for different perspectives. Collaboration also means being able to carry out personal responsibility and personal flexibility, at work and in community relations; setting and achieving high standards and goals for yourself and others and understanding any confusion.

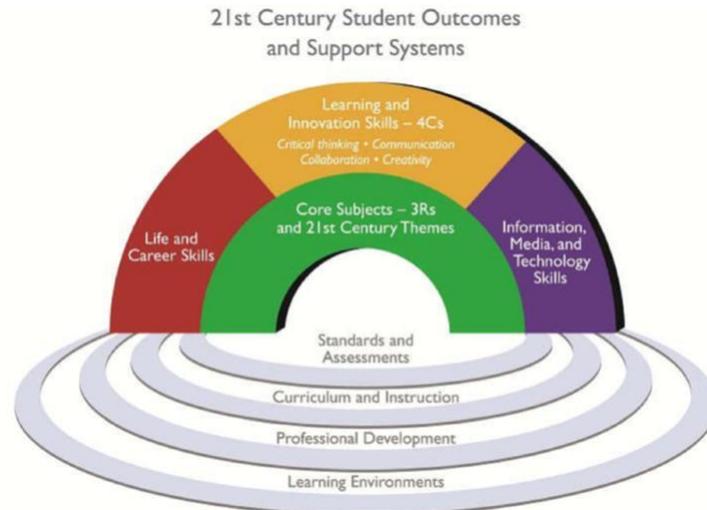
Critical thinking and Problem Solving is the ability to understand a complex problem, connecting information with other information, so that finally various perspectives emerge, and solutions are found to a problem. Critical thinking also means the ability to reason, understand and make complicated choices; understanding the interconnection between systems, compiling, disclosing, analyzing, and solving problems.

Creativity and Innovation is the ability to develop, implement, and convey new ideas to others; being open and responsive to new and different perspectives. Creativity is also defined as a person's ability to create new mergers. Creativity will depend very much on one's creative thinking and the process of one's intellect in creating new ideas. The creativity that can produce discoveries (and is usually economically valuable) is often referred to as innovation (Council, 2013).

The demand for change in the mindset of the 21st-century population has been highlighted above and requires a consequent very big change in national education, as the Indonesian education paradigm is inherited from the old education system where content was memorized as fact without meaning (Council, 2011). Changing the Indonesian education system is not an easy job. Indonesia's education system is one of the largest education systems in the world and includes around 30 million students, 200 thousand educational institutions, and 4 million educators, spread over an area that is almost as large as the European continent. However, this change is a must if Indonesian is to protect herself in the current changing global times.

P21 (Partnership for 21st Century Learning) develops learning frameworks in the 21st century that require students to have skills, knowledge, and abilities in the fields of technology, media, and information, learning and innovation skills as well as life and career skill (Bellanca, 2010). This framework also explains the skills, knowledge, and expertise that must be mastered so that students can be successful in their lives and work and is depicted in Figure 2 below.

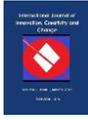
Figure 2. 21st Century Learning Framework



Source: (Lynch, Smith, & Mentor, 2016)

In line with this, the Ministry of Education and Culture has formulated the 21st-century learning paradigm with an emphasis on the ability of students to search from various sources, formulate problems and think analytically and collaboratively in problem-solving. In the 21st century, everyone must have critical thinking skills, knowledge, and digital literacy abilities, information literacy, media literacy and mastering information and communication technology (Frydenberg & Andone, 2011; Pintrich, 2003). 21st Century skills are (1) life and career skills, (2) learning and innovation skills, and (3) information media and technology skills. These three skills are summarized in a scheme called rainbow 21st-century knowledge skills as in Figure 2 above. The scheme was adopted by the nonprofit p21 organization that developed a 21st-century educational framework throughout the world through the www.p21.org site based in the state of Tuscon, USA.

These schemes ,developed as 21st-century learning, are clarified with the addition of 3R core subjects. In the context of education, 3R is an abbreviation of reading, writing, and arithmetic, a strong "R" pronunciation is taken from each word. From the subject of reading and writing, modern educational ideas emerge, namely literacy which is used as learning to understand ideas through words media. From the subject of arithmetic comes a modern education related to numbers which means that numbers can be understood through mathematics. In education, there is no single term that is relevant to literacy and numeracy that can express the ability to make something. The 3R, adapted from the 18th and 19th centuries, is equivalent to the literacy, numeracy and ICT functional skills found in today's modern education system. Furthermore, to clarify the function of the 3R core subject in the context of 21st-century skills, 3R is translated into life and career skills, learning, and innovation skills and information media and technology skills.



Headmaster's Leadership style in the Era of the Industrial Revolution 4.0

The headmaster leadership performance standards have changed with the advent of the Industrial Revolution 4.0. One of the main capabilities the headmaster 4.0 needs is to understand how response to various things in the control room with lightning speed. From 24/7 text communication to public communication capabilities online or offline, the 4.0 environment necessitates that the headmaster be more result-oriented (goal-oriented) and always prioritizing procedures in decision making. Maintaining integrity is a key competency for leaders 4.0 because everything related to work becomes transparent. The headmaster must listen, see, feel and come down to the field of work to make decisions and see the problem as clearly as possible. Decisions made must also be made quickly and accurately (Mukhlisin, 2019).

The ability to develop talents is also the main task of headmasters in the Industrial Revolution Era 4.0. Movement and shift occur more rapidly so that individuals who are not agile and able to adapt quickly from conventional thinking will be redundant. Youth with a series of achievements and competencies need to be directed so that they can go through the regeneration process effectively (Susilo & Putranto, 2017). The millennial who is known to get bored easily and move easily to another desire can be anticipated through the existence of a systemic and promising talent development program and in this way, the team's loyalty will increase.

Finally, inclusive leadership practices must become a leadership style practiced in the daily lives of 'millennial leaders' (Fields, Wilder, Bunch, & Newbold, 2008). Learning must be made from former US President Obama, who managed to play a role as a "millennial whisperer" because he was perceived as capable of overcoming various problems faced by young people in the US, one of which was tolerance and for this reason, Obama won 77% of the votes of the United States youth. Another case in point is current Canadian Prime Minister Justin Trudeau, who became a Canadian millennial idol for successfully internalizing the issue of equality and diversity among young Canadians. In Germany, in 2017 Reuters stated that German Chancellor Angela Merkel received 47% of the votes of novice voters because they were concerned with the issue of peace in the Middle East region. These three examples of leadership case studies identify that the ability to maintain tolerance, keep the peace, and facilitate diversity as a strength, is regarded as required characteristics leaders for success in the 4.0 era (Marshall, Thomas, & Robinson, 2017).

Accepting differences, remaining connected at all times with many parties, adeptness at accommodating perspectives and promotion of cross-line collaboration are essential in various sectors of the 21st Century work field, which if further complicated by the presence of four generations in one work environment. Headmasters in the Industrial Revolution Era 4.0 must be



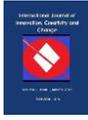
adaptive in facing differences in their operational work systems. Differences in values, perspectives, cultural gaps and ways of communication should not be considered as obstacles, but rather as challenges that must be overcome elegantly. Therefore, school headmasters must demonstrate leadership which prioritizes a human-based approach. The headmaster, in the era of the Industrial Revolution 4.0, should be empathetic to colleagues and promote appreciative culture in the work environment.

Headmaster's Leadership expected in the Era of the Industrial Revolution 4.0

One of the best ways for headmasters to improve the quality of generations is to reform education policies. Therefore, the quality of the education system becomes a determining factor in the strength or weakness of your generation in the future (Schwab, 2017). The Industrial Revolution 4.0 era not only changed the map of industry, but has also shifted perspectives, professions, the ways of communication, employment, consumption, lifestyle, and transactions. Headmasters in the Industrial Revolution Era 4.0 can also be said to be digital leaders. One of the characteristics of digital leadership is the style of decision making based on data, transparent and real time. Put more simply, it is not long-winded and right on target. The young people who are the readiest and able to stabilize themselves with the acceleration and development of the era will survive, particularly as heavier challenges are predicted in the future (Aksal, 2015).

Leadership and communication style are underpinned then by two keywords: participatory and collaborative. These two concepts will help fulfill the organizational management space and leadership required in 4.0. In this fast-paced era, there are certainly many problems that arise before the previous problem has been solved, making solutions more complex (Spendlove, 2014). Therefore, leader 4.0 cannot be isolate and require collaboration from many stakeholders to solve various existing problems (Kagermann et al., 2013). Headmasters need to hone their skills more and sharpen their abilities in reducing bureaucracy, managing diversity and two-way communication and facilitate collaboration between parties.

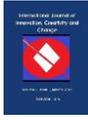
The findings of this study are that the key attributes that need to be demonstrated as a headmaster in the Industrial Revolution Era 4.0. are that they can: unite and give clear direction; communicate effectively; make the team feel safe; engage all stakeholders in a unidirectional community; design a blueprint that is understood and believed by all members of their elementary school organization. The headmaster must be able to create confidence in the team. Finally, most importantly, a strong headmaster has a vision that is not just a vision for the school, but also greater than that, influences the entire school team, the surrounding environment and even the world (Lynch, Smith, & Mentor, 2016).



Headmasters must evidence speed in making decisions as in this 4.0 era, things change quickly. The era where the headmaster was only in the office with a computer and working with data after its collection is no longer effective as a leader must be visible and involved. Headmasters need to evaluate, and control teachers and students together, feedback needs to be constant and integrated not only internally but also connected with external parties such as stakeholders (Fields et al., 2008). Headmasters must also be brave, willing to accept, encourage and motivate teachers to provide feedback on their leadership for mutual progress. It would be best if the headmaster could also challenge himself to get out of his comfort zone by coaching and receiving feedback from people outside the school organization (Yulizar & Farida, 2019).

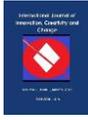
Conclusion

The ideal leadership attends to the demands of the Industrial Revolution 4.0. Headmaster leadership that is in line the development of technology must demonstrate skills in influencing, encouraging, guiding, directing and moving stakeholders in the implementation and development of education and teaching in this era. The goal is that headmasters be more result-oriented (goal-oriented) and prioritizing procedures in decision making. Maintaining integrity is a key competency for leaders during Industrial Revolution 4.0 because everything related to work becomes transparent. The headmaster must listen, see, feel, and be visible in the school to make decisions quickly and accurately and solve problems efficaciously.



References

- Ahmad, I. (2018). Pendidikan Tinggi“ 4.0” yang Mampu Meningkatkan Daya Saing Bangsa. *Makassar, Indonesia*.
- Aksal, F. A. (2015). Are headmasters digital leaders in school culture? *Education & Science/Egitim ve Bilim*, 40(182).
- Amelia, R. (2017). The Learning of Writing Experimental Reports with Scientific Approach at Elementary School. *9th International Conference for Science Educators and Teachers (ICSET 2017)*. Atlantis Press.
- Amin, S., & Siregar, F. M. (2015). Pemimpin dan Kepemimpinan dalam al-Qur’an. *Tanzil: Jurnal Studi Al-Quran*, 1(1), 27–40.
- Aslamiah, A. (2019). *Peer Review: Hubungan Kepemimpinan Intruksional Kepala Sekolah, Profesional Learning Community (PLC), dan Motivasi Terhadap Kinerja Mengajar Guru SD Kecamatan Banjarmasin Timur*.
- Baharuddin, U. (2012). Kepemimpinan Pendidikan Islam: Antara Teori & Praktik. *Yogyakarta: Ar Ruzz Media*.
- Bellanca, J. A. (2010). *21st century skills: Rethinking how students learn*. Solution Tree Press.
- Council, N. R. (2011). *Assessing 21st century skills: Summary of a workshop*. National Academies Press.
- Council, N. R. (2013). *Education for life and work: Developing transferable knowledge and skills in the 21st century*. National Academies Press.
- Creswell, J. W., & Poth, C. N. (2017). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.
- De la Garza, A., & Travis, C. (2018). *The STEAM Revolution: Transdisciplinary Approaches to Science, Technology, Engineering, Arts, Humanities and Mathematics*. Springer.
- Fields, B., Wilder, S., Bunch, J., & Newbold, R. (2008). *Millennial leaders: Success stories from today’s most brilliant Generation Y leaders*. Millennial Leaders.
- Frydenberg, M., & Andone, D. (2011). Learning for 21st century skills. *International Conference on Information Society (I-Society 2011)*, 314–318. IEEE.
- Ghufron, G. (2018). REVOLUSI INDUSTRI 4.0: TANTANGAN, PELUANG, DAN SOLUSI BAGI DUNIA PENDIDIKAN. *Seminar Nasional Dan Diskusi Panel Multidisiplin Hasil Penelitian Dan Pengabdian Kepada Masyarakat 2018*, 1(1).
- Hasan Baharun, Z. (2017). Manajemen Mutu Pendidikan: Ikhtiar dalam Meningkatkan Mutu Pendidikan Madrasah melalui Pendekatan Balanced Scorecard. *Tulungagung: Akademia Pustaka*.
- Kagermann, H., Helbig, J., Hellinger, A., & Wahlster, W. (2013). *Recommendations for implementing the strategic initiative INDUSTRIE 4.0: Securing the future of German manufacturing industry; final report of the Industrie 4.0 Working Group*. Forschungsunion.



- Kasali, R. (2018). *Disruption*.
- Lasno, L., Suriansyah, A., & Saleh, M. (2019). SCHOOL PRINCIPAL'S ROLE IN THE IMPLEMENTATION OF SCHOOL-BASED MANAGEMENT FOR ADIWIYATA PROGRAM. *European Journal of Education Studies*.
- Lynch, D., Smith, R., & Mentor, I. (2016). Reforming Teacher Education: From partnership to syndication. *International Journal of Innovation, Creativity and Change*, 2(3), 27–40.
- Marshall, J., Thomas, K., & Robinson, S. (2017). 21st-Century Students in 20th Century Classrooms: Promoting Student-Centred Learning in Mismatched Caribbean Classrooms. In *Student-Driven Learning Strategies for the 21st Century Classroom* (pp. 140–159). IGI Global.
- Mukhlisin, A. (2019). KEPEMIMPINAN PENDIDIKAN DI ERA REVOLUSI INDUSTRI 4.0. *Jurnal Tawadhu*, 3(1), 674–692.
- Niqab, M., Sharma, S., Wei, L. M., & Maulod, S. B. A. (2014). Instructional Leadership Potential among School Principals in Pakistan. *International Education Studies*, 7(6), 74–85.
- Normianti, H., Aslamiah, A., & Suhaimi, S. (2019). RELATIONSHIP OF TRANSFORMATIONAL LEADERS OF PRINCIPAL, TEACHER MOTIVATION, TEACHER ORGANIZATION COMMITMENTS WITH PERFORMANCE OF PRIMARY SCHOOL TEACHERS IN LABUAN AMAS SELATAN, INDONESIA. *European Journal of Education Studies*.
- Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of Educational Psychology*, 95(4), 667.
- Puncreobutr, V. (2016). Education 4.0: New challenge of learning. *St. Theresa Journal of Humanities and Social Sciences*, 2(2).
- Risdianto, E. (2019). *Analisis Pendidikan Indonesia di Era Revolusi Industri 4.0*.
- Rohida, L. (2018). Pengaruh era revolusi industri 4.0 terhadap kompetensi sumber daya manusia. *Jurnal Manajemen Dan Bisnis Indonesia*, 6(1), 114–136.
- Satya, V. E. (2018). Strategi Indonesia Menghadapi Industri 4.0. *Info Singkat: Kajian Singkat Terhadap Isu Aktual Dan Strategis*, 10.
- Schwab, K. (2017). *The fourth industrial revolution*. Currency.
- Sommer, L. (2015). Industrial revolution-industry 4.0: Are German manufacturing SMEs the first victims of this revolution? *Journal of Industrial Engineering and Management*, 8(5), 1512–1532.
- Spendlove, D. (2014). Educational Innovation: Transforming Teacher education in England. *International Journal of Innovation, Creativity and Change*, 1(3).
- Suriansyah, A. (2017). Implementation of The Total Quality Management Model to Support Quality of Work Cultures at Primary School Teacher Education Programs in Lambung



- Mangkurat University Indonesia. *Australian Journal of Basic and Applied Sciences*, 11(9), 179–186.
- Susilo, D., & Putranto, T. D. (2017). Indonesian youth on social media: study on content analysis. *2017 International Seminar on Social Science and Humanities Research (SSHHR 2017)*. Atlantis Press.
- Triyanto, E., Anitah, S., & Suryani, N. (2013). Peran kepemimpinan kepala sekolah dalam pemanfaatan media pembelajaran sebagai upaya peningkatan kualitas proses pembelajaran. *Teknologi Pendidikan*, 1(2), 226–238.
- Wollschlaeger, M., Sauter, T., & Jasperneite, J. (2017). The future of industrial communication: Automation networks in the era of the internet of things and industry 4.0. *IEEE Industrial Electronics Magazine*, 11(1), 17–27.
- Yulizar, Y., & Farida, F. (2019). KEPEMIMPINAN KEPALA SEKOLAH DI ERA DISRUPSI. *PROSIDING SEMINAR NASIONAL PROGRAM PASCASARJANA UNIVERSITAS PGRI PALEMBANG*.