



Excellent School in 4.0 and 5.0 Era through Quality Management Policy and Quality Culture Perspective

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Abstract. The development of education in the era of Industry 4.0 and Society 5.0 cannot be avoided. Education is expected to guide and prepare individuals to adapt and contribute to an increasingly integrated society. In the era of globalization, the education sector is filled with competition in terms of quality from the educational world, particularly the quality of students and the education system itself. This necessitates collaboration between educational institutions, the government, and industry to create a responsive curriculum and a learning environment that supports skill development. This research uses a qualitative approach based on a literature review. The research findings indicate that some of the key qualities expected from students and educators in the Industry 4.0 era include cooperative nature and communication skills, proficiency in utilizing technology, as well as learning ability and superior personal characteristics. Furthermore, there are four dimensions that characterize the learning model in the Industry 4.0 era: knowledge, skills, character, and meta-learning. The wise use of technology enables more interactive and effective learning experiences, while the development of strong personal characteristics such as mental resilience and creativity is crucial to successfully facing the challenges of the digital era.

Keyword: Excellent School, Quality Management Policy, Quality Culture Perspective

1 Introduction

The development of education in the era of the industrial revolution 4.0 and society 5.0 cannot be avoided [1], [2]. The education system cannot be separated from the development of the industry. Technology can be utilized to support the teaching and learning process and develop mindsets, innovation, and creativity of students to produce the next generation of the nation who are superior and able to compete [3], [4]. To perfect the challenges of the 4.0 era, the concept of 5.0 was also developed, namely the concept of a society where humans are the center and will live side by side with existing technological developments (Soraya & Suherman, 2022). The education system is expected to be able to direct and prepare individuals to adapt and contribute to an increasingly integrated society [5], [6], [7], [8].

Technological developments require a society that is ready to face the changes that occur in this era of globalization, including in the field of education. In the era of

globalization, the field of education is filled with quality competition from the world of education, especially the quality of students and the education system itself [1]. This requires collaboration between educational institutions, government, and industry to create a responsive curriculum and create a learning environment that supports skills development [9], [10], [11], [12]. Education also needs to emphasize humanistic values, ethics, and social concern to form individuals who are technologically intelligent and have moral integrity and empathy for others, thus, education can be a means to build an inclusive, sustainable, and future-oriented society [13], [14], [15], [16], [17]. Educational institutions should prioritize quality in providing educational services and developing human resources in the form of students [18]. This implies that school institutions are required to always innovate in creating excellence and not be easily satisfied with the achievements that have been obtained. The increasing need of the community for schools that are able to provide good education to students and prepare them to face various problems in the industrial revolution era has given rise to superior schools to help them [19].

Excellent schools are schools that can implement strategies to improve quality culture, develop learning opportunities, and maintain quality efficiently [20], [21]. Excellent schools are able to direct their resources to plan, organize, direct actions, and control to achieve school goals. These goals are usually in the form of learning services and their management, facilities and infrastructure, financing, collaboration with the community, and the implementation of excellent school culture [22]. Excellent schools can also be interpreted as schools that can maximize the function of their students, the professional abilities of educators, the use of school facilities in teaching and learning activities to produce educational outcomes with good quality. The criteria for excellent schools are usually schools that implement faith in God Almighty, independence in facing the era of globalization, excellence and creativity, expertise and professionalism in mastering science and technology, and togetherness and family. These advantages include aspects of attitude (affective), knowledge (cognitive), and ability (psychomotor). Education in the era of the industrial revolution 4.0 and society 5.0 must focus on the integral development of students so that they are able to achieve their maximum potential in facing future challenges [23], [24], [25], [26]. One of the implementations to realize superior schools is by developing educational quality management. The concept of quality management implies that all school resources must be managed in a directed and integrated manner according to their management functions in the school [27]. The planning function involves identifying the goals and vision of the school and formulating strategic steps to achieve them. Careful planning will help schools direct resources efficiently and effectively to achieve educational excellence [28], [29]. The organizing function includes arranging the school's organizational structure, assigning tasks and responsibilities, and forming an effective work team.

Good organization will create harmonious cooperation among all parties in the school and ensure that all activities run smoothly [30], [31]. The implementation function, plans and policies that have been prepared are implemented well. Teachers and school

staff must be equipped with the skills and knowledge needed to carry out their duties effectively, in addition, innovative and interactive learning needs to be implemented to improve students' learning experiences [32], [33]. The supervisory function includes monitoring and evaluating the implementation of school education programs. Through regular supervision, schools can identify areas that need improvement and take the necessary corrective actions to improve the quality of education [34], [35], in addition to the four stages of quality management, it is also important to pay attention to aspects of community participation and parental involvement in the education process. Collaboration between schools, communities, and parents can strengthen support for quality education. By developing holistic and integrated education quality management, it is hoped that schools can achieve a higher level of excellence and produce graduates who are ready to compete in the era of the industrial revolution 4.0 and society 5.0 [36], [37].

Technological developments in the era of the industrial revolution 4.0 and society 5.0 require the application of technology in every aspect of life. Indonesia's readiness to face technological developments can be clearly seen during the past pandemic. The implementation of distance learning methods in almost all educational institutions is a new phenomenon. Some Indonesian students have been able to accept these changes, but the same cannot be said about the education system and culture in Indonesia. Difficulties in using learning platforms or media with online systems are often encountered by students and educators who take distance learning. This shows that educational infrastructure is the keyword and root of the problems that arise in digital learning [38]. The success of the Indonesian education system in providing learning to students depends on whether Indonesia can implement technology-based learning in the teaching and learning process.

The problem of ensuring the quality of education in Indonesia during the industrial revolution 4.0 and society 5.0 is not only the implementation of technology in the learning system. Education in Indonesia must also emphasize the importance of character education for students. Research conducted by Faiz et al. (2021) shows that character education in Indonesia still has to face several obstacles, including the low awareness of students regarding negative behavior that must be abandoned when they are exposed to such behavior through social media [39]. Character education can influence how technology is utilized in the education system where students with good character can sort out the benefits they receive from technology while remaining aware of the negative impacts it can cause, in addition to the lack of character education in Indonesia, Indonesian education should also pay attention to digital literacy in teaching and learning activities. Anam (2023) stated that Indonesia is the country with the lowest level of digital literacy in ASEAN. Digital literacy allows students to detect early online risks that can arise from the use of digital technology [40].

The application of technology in Indonesia in the era of the industrial revolution 4.0 and society 5.0 often makes students underestimate social interactions in the real world

and prefer to spend their free time in cyberspace. Research conducted by Ayub (2022) discusses the negative impacts of the high intensity of technology application by students [41]. The more often students use technology, the less time they will have to interact socially with their peers in real life. This can then affect the mental state and self-regulation of the student. Based on this description, it can be concluded that the problems faced by schools and the education system in Indonesia during the industrial revolution 4.0 and society 5.0 include the implementation of technology in the education system itself and the character and digital literacy that students should have in dealing with this technology. In the National Education System Law (Law No. 20 of 2003 concerning SISDIKNAS) it is stated that education is a basic and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have spiritual religious strength, self-control, personality, intelligence, noble morals and skills needed by themselves, society, nation and state. While the purpose of education is for students to become people who believe and are devoted to God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent and become democratic and responsible citizens. Schools function as a place to share knowledge and values and also function to maintain and develop traditions and noble cultures in a society through the process of personality formation so that they become adults who are able to stand alone in the surrounding culture and society.

Along the way, it turns out that the educational process that takes place in schools is not as simple as imagined. It turns out that with all kinds of complexities in the background of the family and environment of students, school activities in achieving educational goals may not run as desired. As is the case when students who have been taught by such a destroyed environment and family situation, must face school regulations. Of course, there is resistance from some of them, both directly and indirectly. Directly indicated by a rebellious attitude, while indirectly marked by a decrease in student interest and learning achievement. Such circumstances make graduates not as expected, nor as expected by the law and educational goals as mentioned earlier.

Various solutions are sought. Education observers from the past until now have worked hard, including by making various preventive and solution efforts including efforts to improve teacher competence, including setting various special requirements that must be possessed by prospective teachers, setting service standards and improving facilities and infrastructure, and including the most recent is changing the curriculum. These efforts are applied in pilot models, for example by creating Model schools, RSBI schools, and superior schools. Although there is still no guarantee in achieving learning objectives as a whole, at least these real efforts can be seen in concrete terms. Superior schools show superiority over other schools, as well as intellectual arrogance that is deliberately embedded in the school environment over other schools that are of lesser quality. Superior schools are considered to meet the minimum criteria in the National Education Standards set by the government. In addition to adequate facilities and

infrastructure, superior schools are also equipped with qualified teaching and education personnel, marked by various academic achievements.

The integration of technology and education applications can be clearly seen during the COVID-19 pandemic that has occurred since early 2020. The circular issued by the Ministry of Education and Culture in the form of Circular Letter Number 15 of 2020 concerning Guidelines for Implementing Learning from Home during the Emergency Period of the Spread of COVID-19 implements that educators are expected to continue to ensure the fulfillment of students' rights to receive educational services during the COVID-19 emergency. The fulfillment of these rights is provided through online learning methods that require the implementation of technology in the long term during the learning process. In addition, the existence of superior schools in Indonesia today is no longer only in the form of certain schools but is more evenly distributed. The equalization of the quality of education occurs due to the Regulation of the Minister of Education and Culture (Permendikbud) Number 14 of 2018 concerning New Student Admissions (PPDB) which regulates the zoning system. This system requires schools to prioritize accepting prospective students who live close to the location of the school. This makes the students in each school more diverse. The zoning system allows schools to guarantee the quality of their education by providing learning materials at their schools and no longer based on students accepted into the school.

2 METHOD

The analysis process consisted of a systematic and consistent data collection stage, a research data analysis and selection stage, a research results incorporation stage, and a deductive conclusion stage, from general to specific issues.

3 Results And Discussion

Some of the key qualities expected of students and educators in the era of the industrial revolution 4.0 include cooperativeness and communication skills, technological savvy, and superior learning abilities and personal characteristics [42]. Education in this era can not only be provided in schools, but schools themselves turn into an innovative construct that replaces face-to-face classes into virtual classes that can be followed by anyone and anywhere as a source of learning that continues to innovate. The virtual classroom certainly does not appear by itself, but develops from technology in the education sector, especially the internet. This makes technology something that must be mastered by everyone in the world of education in the era of the industrial revolution 4.0 so as not to be crushed by the progress of civilization [43]. However, it is important to remember that the development of virtual classrooms did not happen instantly, but as a result of continuous changes in educational technology. Technology has become the core of education in the era of the industrial revolution 4.0, and therefore, mastering technology is a must for all parties involved in education. This is so that they can keep

up with the times and not be left behind by the progress of civilization [44]. By utilizing technology wisely, both students and educators can create a more engaging, interactive, and powerful learning experience. Equally important, superior personal characteristics, such as mental toughness, creativity, independence and adaptability, are also key to success in facing the challenges presented by the industrial revolution 4.0. Education in this era does not only aim to transfer knowledge, but also to form individuals who are ready to face change, collaborate and innovate. Thus, education in the era of the industrial revolution 4.0 is not only about mastering subject matter, but also about developing the skills, character, and attitudes necessary for success in an ever-changing and evolving society [45].

Fadel et al. formulated four dimensions in the learning model in the era of industrial revolution 4.0, namely knowledge, ability, character, meta-learning that can sustain education in this era [38]. The knowledge dimension relates to learning topics that are related to the learning area itself. This dimension includes digital literacy, information culture, thinking systems, and environmental and digital culture. Research conducted by Purnama et al. (2021) on students in Indonesia shows that digital literacy has a significant correlation with online risk ($T = 6.184$; $p = 0.000$) and self-control ($T = 2.109$; $p = 0.035$) [46]. This shows that the higher the students' digital literacy, the greater their concern for online risks that may occur to them and the greater their self-control in using digital technology. Nevertheless, the level of digital literacy in Indonesia still shows alarming numbers [47]. Nugraha (2022) states that Indonesia's digital literacy level is still at a moderate level and must continue to be improved, in line with a CNBC Indonesia article (Anam, 2023) which states that Indonesia is the country with the lowest level of digital literacy in ASEAN [27], [40]. Given the importance of digital literacy to the knowledge dimension of technology-based learning models, Indonesia's learning system should support students to improve their digital literacy levels.

The next dimension of the learning model in the era of the industrial revolution 4.0 is the ability dimension that focuses on developing skills through real-life situations that can improve self-regulation, communication, and reflection as well as transferring knowledge and learning [38]. Students and educators are expected to develop creativity, critical thinking, communication, and collaboration competencies [48]. Research conducted by Zabidi (2019) on Islamic Religious Studies (PAI) teachers showed that teacher creativity in processing learning materials greatly helped the teacher as the subject of the study to build a pleasant classroom atmosphere, increase the level of student focus on learning, and make students easier to direct [49]. The research with a qualitative approach also shows that educators can freely develop their creativity in providing lessons as long as they have technology that can support them. Based on this description, it can be concluded that the availability of technology, whether in the form of learning tools or the internet, is very helpful in the learning and teaching process where technology can help educators to deliver learning more creatively.

The character dimension is the next dimension in the technology-based learning model. It refers to character education to build the foundation of continuous learning, develop work-life balance, and support good relationships between individuals and communities while maintaining the value of personal identity [38]. This dimension relates to curiosity, courage, resilience, bravery, ethics and leadership. Although education in the era of the industrial revolution 4.0 is more often associated with technological development, education in this era also emphasizes the importance of character and personality [50]. Character education is expected to help students find the competencies that best suit them and encourage them to be active and responsible in society. Research conducted by Faiz et al. (2021) discusses the inhibiting factors of character education where one of these factors is technology and media [39]. Technology and media can hinder character education by sending negative information. One example is that media that more often displays negative behavior from public figures can make students who watch it normalize to follow this behavior [51].

The last dimension of the technology-based learning model in the era of industrial revolution 3.0 is the meta-learning dimension which involves higher-level thinking processes that control lower-level thinking processes and involves a mindset towards change [38]. Learners who use technology-based learning models are expected to consider mistakes or as an opportunity to grow and develop and focus more on the process during learning [52]. This is different from the mindset of previous learning models that tend to focus on the results achieved from the learning process and treat mistakes as a failure. Research conducted by Suharyat et al. (2022) shows the effectiveness of learning that applies the concept of meta-learning has high effectiveness in learner understanding (experimental $M = 86$; control $M = 65.6$; $N\text{-gain} = 0.55$) [53]. Meta-based learning encourages students to be more creative and free in learning so that they are more mature in mastering learning concepts [54]. Unfortunately, most students in Indonesia in this era still do not apply the concept of meta-learning where they tend to be more concerned with good grades than their process of getting those grades. Learning in excellent schools in the era of the industrial revolution 4.0 is expected to emphasize the importance of understanding the process and concept of a learning material.

The education system in Indonesia in the era of industrial revolution 4.0 and society 5.0 still needs some improvements to be able to implement technology-based learning. The main obstacle that must be faced is the provision of adequate internet and technology systems. Excellent schools that are expected to be better at producing students who are better prepared to face challenges in communities and organizations after they finish school should start implementing the concept of technology-based learning given the need for students to understand technology in this globalization era

4 Conclusion

The discussion underlines the importance of core qualities for learners and educators in the era of the fourth industrial revolution, where the use of technology is key to educational transformation. Wise use of technology enables a more interactive and effective learning experience, while the development of strong personal characteristics such as mental toughness and creativity is key to success in facing the challenges of the digital era. A learning model consisting of four dimensions, namely knowledge, skills, character, and meta-learning, supports education in preparing individuals for the future. Challenges that need to be overcome include the low level of digital literacy in Indonesia, which requires continuous improvement efforts. Overall, holistic education that focuses on technology, personal quality development, and innovation in learning approaches is key to facing the fourth industrial revolution successfully. Some suggestions related to the discussion can be conveyed as follows.

1. **Strengthening Digital Literacy:** Concrete efforts need to be made to improve digital literacy among students and educators. This can be done through training, courses, and curriculum development that integrates digital literacy into the learning process.
2. **Developing Technology-Based Skills:** Schools and educational institutions need to focus on developing technology-based skills for all stakeholders, including students, teachers, and school staff. This can be done through regular training, professional development programs, and integrating technology into the curriculum.
3. **Character Education:** It is important to continue to emphasize the importance of character education alongside the development of technical skills. Schools can include values such as ethics, responsibility, and leadership in the curriculum and extracurricular activities.
4. **Developing Technology-Based Learning Models:** Investments need to be made in the development of creative and innovative technology-based learning models. This includes the use of online learning platforms, learning applications, and interactive digital resources.
5. **Collaboration between Schools, Government, and Industry:** Collaboration between educational institutions, government, and industry is essential to ensure the relevance of the curriculum to the needs of the world of work. This can be done through internship programs, project collaborations, and knowledge exchange between the sectors.
6. **Development of Critical and Creative Thinking Skills:** Schools should place emphasis on the development of critical and creative thinking skills as an integral part of education. This can be done through project-based learning, debates, and problem-solving challenges.
7. **Continuous Evaluation and Adjustment:** It is important to continuously evaluate the effectiveness of education in the face of technological developments and future demands. Schools need to have a mechanism for continuous evaluation and adjustment to ensure the relevance and quality of the education produced.

By implementing these suggestions, it is hoped that education can become more adaptive, relevant, and effective in preparing future generations to face the challenges of the digital era. Policies that affect the course of learning in schools such as

regulations for accepting new students to the learning methods used should not be a barrier to the development of education in any era, not only in the era of industry 4.0, but should be a driver for schools to always guarantee the quality of education that is channeled to students.

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