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The Principles of Science and Technology in the Development of Islamic Religious Education Curriculum

Sulaiman Sihombing*

Universitas Islam Negeri Sunan Kalijaga Yogyakarta, Indonesia

e-mail: sihombingsulaiman7@gmail.com

Aisyah Futri Utami Daulay

Universitas Islam Negeri Sunan Kalijaga Yogyakarta, Indonesia

e-mail: aisyahfutriutamidaulay@gmail.com

ABSTRAK

Islamic religious education faces the challenge of disruption in the era of the industrial revolution 4.0. The development of digital science and technology means that everyone can access all types of information and connect quickly through the internet and its innovations (internet of things). The effects of technology have both positive and negative potential for humans. Islamic religious education must be able to prepare human resources who have faith and morals and become Muslim intellectuals. The development of the Islamic education curriculum is an effort to face challenges in the era of the industrial revolution 4.0 which is synonymous with sophisticated information technology. This study uses the library method by collecting and analyzing library data. The results of the study show the need to adjust the Islamic religious education curriculum in the current digital era, from the goal of Islamic education, which is to make educated people become Muslim intellectuals, learning methods using a combination of conventional and technology, namely blended learning, the content of the material must be adjusted to the circumstances and skills needs of the 4.0 era, comprehensive evaluation and shared responsibility (educational ecosystem). Educators must adapt and have the competencies needed in the digital era and infrastructure that is adapted to technological developments. which is synonymous with advanced information technology.

Keyword: Curriculum Development, Knowledge, Technology

INTRODUCTION

Science is a collection of knowledge that is obtained in a structured manner through the research or research process. Meanwhile, technology is the application of science to solve various practical problems in life. The two are interrelated and inseparable. Since the Middle Ages, science has made significant progress. The development of science today is heavily influenced by various discoveries and ideas from ancient philosophers, such as Plato, Socrates, Aristotle, John Dewey, Archimedes, and others. In the beginning, technology and science developed in a relatively simple way. However, since the Middle Ages, both have experienced rapid progress. Along with the evolution of the human way of thinking, various new innovations in various aspects of life, such as social, economic, cultural, political, and other fields, continue to emerge. Science and technology have a mutually influential relationship with education and curriculum. The technologically advanced industry produces various tools and materials that directly or indirectly support educational needs,

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¹ Farrah Camelia, "Analysis of the Foundations of Science and Technology in Curriculum Development," *SAP (Educational Articles Collection)* 5, no. 1 (2020), https://doi.org/10.30998/sap.v5i1.6474.

² Adiyono Adiyono, Julaiha Julaiha, and Siti Jumrah, "Changes in the Development of Islamic Religious Education Curriculum in Madrasah Aliyah Negeri Insan Cendikia Paser," *IQRO: Journal of Islamic Education* 6, no. 1 (2023): 33–60, https://doi.org/10.24256/iqro.v6i1.4017.

³ Novita Hidayanti, "The Development of the Islamic Religious Education Curriculum in Meeting the Demands of Critical Thinking Competency in the 21st Era," *Treatise: Journal of Islamic Education and Studies* 9, no. 3 (2023): 1229–38.

^{*}Corresponding author

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while at the same time requiring competent human resources to use them. In the educational process, the use of industrial products such as television, radio, video, computers, and other devices is indispensable to support the implementation of educational programs. Especially in the era of increasingly sophisticated communication technology development, this requires adequate knowledge, skills, and proficiency from teachers and other educational program implementers.⁴

Islamic Religious Education education and curriculum need to be able to adapt to the rapid development of science and technology, especially in the 4.0 era. Islamic education seeks to equip students with a deep understanding of the teachings of Islam that serve as a guideline for a Muslim's life, outlook, and handle. As an inseparable part of human civilization, Islamic education plays an important role in maintaining the sustainability and resilience of the ummah in facing the dynamics of change and development of the times⁵ Change and development is something that cannot be avoided. The advancement of science and technology, with global pressure, requires the world community to change its perspective and the way it works. This change is marked by the emergence of a new era, namely the Industrial Revolution 4.0, which is also known as the digital era or the era of disruption. This era brought fundamental and massive changes, especially in the field of technology, which impacted various aspects of life. Although society and technology have now become an inseparable part of life, readiness and maturity in creating and utilizing technology are often not in line with these needs.⁶

Education is sought to help solve various problems faced by humans, thereby encouraging individuals to continue to learn and develop. Through education, humans can explore, recognize, discover, and understand the potential they have to be effectively optimized. Thus, they are able to take advantage of nature, the environment, and the opportunities that exist for the good of themselves, others, and their environment. Each era has its own challenges, including in Islamic education in the 4.0 era. Technological advances that affect various aspects of life have both positive and negative impacts on their users. Therefore, competent human resources (educators) and an education system that are able to prepare individuals to face these challenges are needed.⁷

Education aims to create quality human resources, with the curriculum as the main tool to achieve this. Curriculum is a set of arrangements designed so that the educational process can run according to the goals that have been set. The components in the curriculum include objectives, methods, content or materials, organization, and evaluation. The curriculum is designed as an educational program that is prepared to support the student learning process in a planned and systematic manner. The curriculum in Indonesia continues to change in line with the development of the nation and global dynamics. This change began from the beginning of independence, with the use of the term *leer plan* in

⁴ Ossi Marga Ramadhan, Acep Heris Hermawan, and Mohamad Erihadiana, "The Development of Islamic Education Curriculum in the New Normal Era," *Intellectual Journal: Journal of Islamic Education and Studies* 11, no. 1 (2021): 32–45, https://doi.org/10.33367/ji.v11i1.1588.

⁵ Bangkinang District, "STRENGTHENING HOT 'S THINKING IN ISLAMIC EDUCATION IN THE ERA OF SOCEITY 5 . 0," 2022.

⁶ Then Abdurrahman Wahid and Tasman Hamami, "The Challenges of Islamic Education Curriculum Development and Its Development Strategies in Facing Future Competency Demands," *J-PAI: Journal of Islamic Religious Education* 8, no. 1 (2021): 23–36, https://doi.org/10.18860/jpai.v8i1.15222.

⁷ Adiyono, Julaiha, and Jumrah, "Changes in the Development of the Islamic Religious Education Curriculum at Madrasah Aliyah Negeri Insan Cendikia Paser."

⁸ Hidayanti, "The Development of the Islamic Religious Education Curriculum in Fulfilling the Demands of Critical Thinking Competency in the 21st Era."

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1947, until the curriculum used today, namely the 2013 Curriculum (K-13). Throughout history, the curriculum has undergone 11 changes, starting from the 1947 Lesson Plan, the 1952 Lesson Plan, the 1964 Curriculum, the 1968 Curriculum, the 1975 Curriculum (MBO), the 1984 Curriculum (CBSA), the 1994 Curriculum with the 1999 Curriculum Supplement, the 2004 Curriculum (KBK), the 2006 Curriculum (KTSP), the 2013 Curriculum (K-13), to the Independent Curriculum that is currently applied. This change reflects Indonesia's efforts to continue to find the best formula in the education system to develop potential and competent human resources.⁹

Curriculum changes and developments are part of the dynamics in the world of education. This also applies to the implementation of Islamic religious education, which is not only limited to understanding and implementing obligations in implementing the curriculum. Educators are required to be able to develop the Islamic education curriculum to be relevant to the development of the Industrial Revolution 4.0 era. Thus, Islamic education can provide real benefits and be applied in daily life as a way of life. Therefore, the development of the Islamic religious education curriculum needs to be prepared as best as possible so that Islamic religious education can provide spiritual values in utilizing developments and changes in the era of disruption in order to become a body in development that brings people to life.

METHOD

This research uses a literature research approach. The method applied in this study focuses on the use of data sourced from the selected literature, which is relevant to the problems discussed in the main research and related to the studies that have been conducted. This study focuses on content analysis, which is a comprehensive analysis of various information materials such as books, journals, articles, and other relevant sources. These materials are used as a data source to examine problems related to curriculum development and the application of knowledge and technology principles in the implementation of the Islamic Religious Education (PAI) curriculum.

RESULTS AND DISCUSSION

Basic Concepts of Curriculum Basics

Principles are fundamental things, related to the main thoughts, goals, and principles of an action. It can be analogous to a building, such as a house or tall building in big cities. Before a building stands firm, of course, it is necessary to first build a clear foundation so that the building remains strong against bad weather, strong winds, and earthquakes, so that it can be used safely. From this analogy, we can understand how important a foundation, foundation, or foundation is in a thing. ¹² In the classical view, the curriculum is defined as a collection of all subjects taught to students. However, some views state that the

⁹ Amira Mawardi, "The Development of the Islamic Religious Education Curriculum in Indonesia," *Islamic Religious Education* 01, no. 01 (2023): 29–36.

¹⁰ Putri Oktavia and Khusnul Khotimah, "DEVELOPMENT OF ISLAMIC RELIGIOUS EDUCATION LEARNING METHODS IN THE DIGITAL ERA Islamic religious education has an important role in shaping the character and morality of Muslim individuals. In the rapidly growing digital era, the development of learning methods is P," an Najah Journal of Islamic and Social Religious Education 02, no. 05 (2023): 1–9.

¹¹ MA Dr. Umar Sidiq, M.Ag Dr. Moh. Miftachul Choiri, *Qualitative Research Methods in the Field of Education*, *Journal of Chemical Information and Modeling*, vol. 53, 2019.

¹² Tsani Aulia Rachman Raden Vina Iskandya Putri1, "Бсп За България" е под номер 1 в бюлетината за вота, герб - с номер 2, пп-дб - с номер 12," The Role of Customer Satisfaction in Mediating the Influence of Customer Relationship Marketing on Customer Loyalty 2, no. 3 (2023): 310–24.

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curriculum should be in the form of a series of experiences that include social sciences, education, culture, sports, and the arts in each educational institution. This aims to develop various aspects in students so that they are better able to adjust to the desired educational goals. As a collection of subjects, each student must study it until results are achieved in the form of grades, both physical and non-physical, such as behavior. These values are then used as a measure of student success listed in the diploma.¹³

As it develops, the curriculum has a broader meaning. In modern education, the curriculum is more holistic and comprehensive, covering all educational elements that are interrelated in the entire educational process. In Muhammad Irsad's journal, Ahmad Tafsir argued that the curriculum is not just a lesson plan or a specific field of study, but covers the entire series that occurs in the educational process in schools. Meanwhile, according to Hasan Langgunglung, the curriculum is a combination of experience, education, culture, social, sports, and arts that are managed both in the classroom and outside the classroom. According to Nasution, the curriculum by definition can be divided into several parts as follows, First, the curriculum as a product is the work of the curriculum developer, which is usually compiled by a special committee and the result is in the form of a guidebook that contains the subjects that must be taught. Second, the curriculum as a program is a tool used by schools to achieve their goals, in the form of activities that can support the development of students' potential, such as school association activities, interschool competitions, and scouting. The scope of the curriculum covers a wide range of aspects that can be studied. From these various views, it can be concluded that the curriculum is a series consisting of learning design, subjects, learning processes, skills, attitudes, practices, and assessment guidelines used to measure student success. The value achieved then becomes a product in the form of report cards and diplomas.¹⁴

The Islamic religious education curriculum has the meaning of planning Islamic teaching materials, learning objectives, strategic methods, and evaluation methods. Thus, the Islamic religious education curriculum is a consciously and planned effort to assist students in understanding, appreciating, believing, and practicing the teachings of Islam as a whole.¹⁵ The Islamic religious education curriculum includes learning materials that focus on Islamic religious teachings, starting from structured activities, knowledge, habits, and experiences given to students to achieve the goals of Islamic religious education properly. These tools include Islamic religious teaching materials, Islamic activities, structured programs in the learning process, and practices that can be used as practices for students in carrying out Islamic teachings. From these components, there is also an evaluation that is used as a benchmark to measure the extent of students' success in undergoing Islamic religious education.¹⁶

Curriculum principles refer to the thinking that is used as the basis or foundation in compiling and shaping the curriculum in a structured manner. In the context of the Islamic education curriculum, this principle is the basis for designing materials, activity programs, learning processes, evaluations, and other aspects that are in accordance with the teachings of

¹³ & Aliyah Romdoniyah, Dedih, "Epistemic : Scientific Journal of Epistemic Education : Scientific Journal of Education" 01, no. 02 (2022): 131–52.

¹⁴ Fadhlina Harisnur, "Development of the Integrated Islamic School Network (JSIT) Curriculum for Schools/Madrasas," *Drumang Asa: Journal Of Primary Education* 2, no. 2 (2021): 52–65.

¹⁵ Zakariyah Zakariyah, Muhamad Arif, and Nurotul Faidah, "Analysis of the Islamic Religious Education Curriculum Model in the 21st Century," *At-Ta'Dib: Scientific Journal of the Islamic Religious Education Study Program* 14, no. 1 (2022): 1–13, https://doi.org/10.47498/tadib.v14i1.964.

¹⁶ Ansori, "Islamic Religious Learning in the Digital Era: Challenges and Opportunities in Improving Student Understanding," Journal of Islamic Religious Teacher Professional Education, 2023.

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Islam. The principle of this principle is that each curriculum applied in each educational institution has its own characteristics, so the basis used in compiling the curriculum greatly influences the goals of the education. Educational institutions that focus on Islamic religious education should make the Qur'an and As-Sunnah the main foundation in the preparation of their curriculum. From these two sources, learning materials will be compiled systematically and ready to be used in the learning process. Over time, the Islamic religious education curriculum will undergo significant changes influenced by various factors, so that there are developments in the curriculum. The development of this curriculum illustrates the direction of curriculum change from the present to the expected educational goals, with positive influences both from inside and outside, so that students are ready to face future developments. Therefore, curriculum development must be adaptive, that is, able to adapt to existing conditions, applicable to meet needs, and anticipatory, always ready to face short-term and long-term goals. In its development, the Islamic education curriculum requires principles that are the basis of principles for its development.

Science and Technology

In Indonesian, the word "science" is often interpreted as science and is often paired with the word "knowledge", so it becomes science. Science refers to the understanding or awareness of a knowledge, with the aim of searching, investigating, and analyzing a hypothesis. Knowledge can be interpreted as knowledge obtained through various learning methods and experiences. Thus, science is knowledge that has been tested for truth. Knowledge is information that a person is aware of and knows. Knowledge can be gained through personal experience or gained from others. However, knowledge cannot be called science if its truth has not been tested. In the beginning, humans acquire knowledge from facts that are inaccurate, unsystematic, and not based on clear theories. As culture develops, humans begin to formulate theories based on existing facts. In its development, these facts and theories are used to understand other phenomena, which are supported by experience.

According to Hilda Taba, knowledge has levels, namely: a) Concept, b) Main idea, c) Formulation method, and d) Fact of reality. Some of the requirements for something to be called science include: a) Objective, b) Methodical, which is a method used to prevent errors in the search for the essential truth, c) Systematic, which is a structured arrangement in studying objects, so as to simplify their conclusions, d) Universal, which is the truth obtained after a general study, which means that it can be accepted by all or most of the environment and reality. Knowledge and experience will become science if it is arranged objectively, methodically, systematically, and universally, in accordance with the working procedures of causality law on the problem at hand. Science and technology (IPTEK) owned by humans was still very simple at first, but in the Middle Ages, the development of science and technology experienced rapid progress. Along with technological advancements, human thinking skills have also developed. This is proven when it was previously unimaginable that there were humans who could go to the moon, let alone set foot there. However, advances in science and technology in the mid-20th century proved that the Apollo spacecraft successfully landed on the moon. The development of science today is the result of the contribution of thought and discovery by philosophers such as Socrates, Plato, Aristotle, Archimedes, John Dewey, and others. These

¹⁷ H S Harahap and K N Pasai, "Development of Curriculum Management at Madrasah Aliyah Muallimin Univa Medan," *Tajribiyah: Journal of Religious Education ...*, no. 1 (2022): 63–72.

¹⁸ Mulyani Fitri and Haliza Nur, "Analysis of the Development of Science and Technology (Science and Technology) in Education," *Journal of Education and Counseling (JPDK)* 3, no. 1 (2021): 101–9.

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developments have resulted in various new discoveries in the social, cultural, economic, political, and so on.¹⁹

Basically, technology is the application of science and has a very important role in human life. Technology emerged as a result of human thought through a scientific process that aims to achieve maximum results. In addition, technology can also be understood as a tool that humans use to meet their needs. Its main goal is to create effective, efficient, and harmonious conditions in human behavior patterns. One measure of the progress of human civilization can be seen from the extent of the development of science and technology.²⁰ Technology was created to support human life in various fields. With technology, humans can more easily manage existing natural resources. However, often its use goes beyond the limits, leading to imbalance and human greed, which in turn can lead to the occurrence of natural disasters. Science and technology is a product of objective human thinking, so it is easily accepted and accessed by the public. The presence of science and technology facilitates the dissemination of information, which in turn leads to changes and developments in culture. This development has changed people's mindset and way of life, which continues to adapt to progress. If people cannot keep up with these developments, they will be left behind and have difficulty in utilizing natural resources. As a result, a nation or state can experience setbacks because its citizens are unable to make optimal use of natural resources in the field of science and technology.

In Indonesia, industrial development is still not fully supported by superior potential, especially in the fields of education and human resources. This can be seen from the Education Index which only refers to data on literacy levels and gross participation ratios in primary, secondary, and tertiary education (elementary, junior high, and university). The use of science and technology in Indonesia, especially by educators and researchers, is also not optimal, because many studies have not been developed optimally. Teachers need to keep updating themselves with the development of science and technology in order to be able to deliver material that is relevant and useful for students, both for current and future needs. Thus, this is in line with efforts to update the curriculum that continues to adapt to the progress of science and technology in almost all sectors of life.²¹

The Role of Science and Technology in Education

Education is a deliberate effort to prepare students through guidance, teaching, and training activities, as well as equipping them with knowledge in preparation for their future roles. Meanwhile, technology is the application of science and other disciplines to solve practical problems. Thus, science and technology are inseparable. The development of science and technology is going very fast along with the development of society. Education has also had a significant impact on the advancement of science and technology. Education has a very close relationship with social life, because education is an important part of the social aspect. Education is not only limited to formal education, but also includes non-formal education. This is because education includes all efforts, whether carried out independently or with the help of other parties, to improve knowledge, skills, and form certain attitudes.²²

¹⁹ Muhammad Rizky Ramadhandy Budianto, Syaban Farauq Kurnia, and Tresna Ramadhian Setha Wening Galih, "Islamic Perspective on Science and Technology," *Islamika: Journal of Islamic Sciences* 21, no. 01 (2021): 55–61, https://doi.org/10.32939/islamika.v21i01.776.

²⁰ Lena Wati Asry, "The Relationship of Science and Technology," *Biram Samtani Science* 4, no. 1 (2020): 1–12, https://doi.org/10.55542/jbss.v4i1.82.

²¹ Ramadhan, Hermawan, and Erihadiana, "The Development of the Islamic Education Curriculum in the New Normal Era."

²² Ansori, "Islamic Religious Learning in the Digital Era: Challenges and Opportunities in Improving Student Understanding." That is why

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The development of science and technology, both directly and indirectly, encourages progress in the field of education. The direct influence is to provide material or content that will be taught in education. While the indirect effect is that the advancement of science and technology causes changes in society, which then poses new challenges that require solving through new knowledge, skills, and abilities that must be developed through education. Therefore, the curriculum should be able to accommodate and anticipate the rapid development of science and technology, so that students can follow these developments and contribute to developing science and technology for the welfare and sustainability of human life.²³

The advancement of science and technology has brought humans into a very different era compared to the past, even to a time that was previously difficult to imagine. One of the results of technology, such as in the field of transportation, is that it allows humans to not only explore the entire world, but also outer space. Likewise, advances in the field of information and communication technology, which allow humans to access information from all corners of the world in a very short time. However, these advances not only bring positive impacts, but also various negative impacts that often cause concern. For example, the development of transportation, especially the increase in the number of vehicles in big cities, often causes congestion because it is not balanced with adequate road infrastructure, as well as the high number of accidents due to driver negligence. On the other hand, advances in information technology have also caused anxiety in society, due to the ease of access offered, including for children, to access inappropriate content such as pornography, violence, and so on. This causes a clash between values, norms, and culture in society.

The emergence of these various problems makes the educational tasks reflected in the curriculum even more complex. The burden of school assignments is getting heavier, and often cannot meet all the demands of the community. As time goes by, some responsibilities that were previously not the school's obligation must now be borne by the school. Schools not only function to teach and transmit knowledge, but also must provide skills and instill ethics and moral values. With so many tasks and responsibilities undertaken, the curriculum as an educational tool must be continuously updated to be in line with the changes that occur, both in terms of materials and processes, following the rapid development of science and technology. This is a very important thing to pay attention to and anticipate by curriculum developers.²⁴

Technological advances have played a major role in changing human lifestyles. The use of telephones that facilitate communication, the presence of television stations that provide various programs throughout the day, ranging from education, information, to entertainment, as well as technological advances in the field of health and others, are all factors that drive changes in the lifestyle and even the social structure of society. According to Sanjaya, the lifestyle of modern industrial society has different characteristics compared to the lifestyle of agrarian society. This difference can be seen in several aspects. First, in terms of work patterns: in agrarian societies, work patterns are very regular, taking place during the day with a fixed time. In contrast to industrial society, which not only spends longer hours working, but also has irregular work patterns. This condition has consequences for the strategies that must be

²³ Fahmi Khumaini, Farida Isroani, and Mamlu'ah Aya, "Islamic Education Curriculum Development Policy: Curriculum and Humanistic Approaches in the Digital Era," *Risâlah, Journal of Islamic Education and Studies* 8, no. 2 (2022): 680–92, https://doi.org/10.31943/jurnalrisalah.v8i2.243.

²⁴ Rameyanti Tampubolon, Yona Gulo, and Rosma Nababan, "The Influence of Indonesian Education Curriculum Reform on Learning Quality," *Darma Agung* Journal 30, no. 2 (2022): 389, https://doi.org/10.46930/ojsuda.v30i2.1748.

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prepared by educational institutions. The curriculum needs to be designed to be able to form productive individuals, who are not only capable of work, but also have a love for their work.²⁵

Second, a lifestyle that is highly dependent on the results of technology. In an industrial society, many types of jobs rely heavily on technology, from housework to office work. The skills required for these jobs must of course be prepared by the educational institution. Third, the lifestyle in the new economic system. This change in lifestyle is reflected in the use of banking and insurance service products in economic activities, such as saving, credit, and business financing. In addition, modern shopping centers located in multi-storey buildings are growing rapidly, replacing traditional markets. The rapidly growing trend of globalization has brought significant changes in socio-political life around the world, including in Indonesia. This change can be seen with the emergence of a reform movement that succeeded in overthrowing the New Order regime that had been in power for 32 years. The era of reform should be a turning point, where everything must change. Education needs to be directed to form critical and democratic individuals. Therefore, curriculum developers must fully understand and respond to changes towards transparency. Democratic values must be reflected in the content of the curriculum taught.

Related to this, curriculum developers in carrying out their duties need to take the following steps: (a) Study and understand the needs of the community, as stated in laws, government decisions, regional regulations, and so on. (b) Analyze the culture of the community around the school location. (c) Analyze the strengths and potentials possessed by the local area. (d) Analyze the requirements and demands that exist in the world of work. (e) Interpreting individual needs in the context of the interests of the community as a whole.²⁶

Curriculum development is the process of planning and compiling curriculum by curriculum developers and a series of activities carried out to ensure that the resulting curriculum can be an effective teaching material and reference in achieving national education goals. Curriculum development includes activities to produce a suitable curriculum. This development process includes the preparation, implementation, assessment, and improvement of the curriculum so as to produce an effective curriculum. The development of a technology-oriented curriculum is now an urgent need to be implemented in primary and secondary education institutions to meet the various demands of students in society.

Curriculum Development

In Arabic, the curriculum is known as "manhaj," which means way or way. Meanwhile, according to Law No. 20 of 2003 concerning the National Education System, the curriculum is a system designed to achieve the educational goals that have been set..²⁷ While the curriculum is based on Law No. 20 of 2003 related to the National Education System, the curriculum is a tool with a method or method that has been prepared to carry out the planned goals. The curriculum which was originally only interpreted by subjects, but now has changed its meaning to all activities related to learning in an effort to achieve educational goals ²⁸

According to Doll, the change in understanding of the curriculum is related to the shift in meaning from the curriculum that was previously only related to subjects or studies, now has

²⁵ Sigit Dwi Laksana, "The Importance of Character Education in Facing 21st Century Educational Technology," *Journal of Learning Technology* 1, no. 01 (2021): 14–22, https://doi.org/10.25217/jtep.v1i01.1289.

²⁶ Muhammad Mona Adha and Erwin Susanto, "The Power of Pancasila Values in Building the Personality of Indonesian Society," *Al-Adabiya: Journal of Culture and Religion* 15, no. 01 (2020): 121–38, https://doi.org/10.37680/adabiya.v15i01.319.

²⁷ Muhamad Ghazali Abdah, "Various Approaches in the Development of the Islamic Religious Education Curriculum (PAI)," *Fondatia* 3, no. 1 (2019): 27–41, https://doi.org/10.36088/fondatia.v3i1.158.

²⁸ Camelia, "Analysis of the Foundations of Science and Technology in Curriculum Development."

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developed into all activities in learning organized by schools. In recent years, there has been a change in mindset in educating children, where previously many parents fully entrusted their children's education to teachers. In fact, children's time is spent more outside of school, namely at home and with family, which should be the role of parents to educate their children, not just leave it to teachers. Along with the rapid development of science and technology, school curricula must continue to adapt to these advances, leading to increased responsibilities and challenges for the curriculum to adapt learning to science and technology advances. Some of these explanations illustrate how broad the definition of the curriculum is. To get well-rounded learning, a student needs to have experience in interacting with all members of the school and taking advantage of the various facilities available. Experts and curriculum implementers have different views on the meaning of curriculum "development". According to Winarno Surahmad in Sukiman, curriculum development is defined as an effort to develop and improve the planning in the curriculum. Curriculum development is a term that covers various aspects, namely planning, implementation, and evaluation.²⁹ In curriculum development, the process not only involves parties directly involved in the world of education, but also includes many other parties, such as politicians, entrepreneurs, parents of students, and other elements of society who have an interest in education. In this case, the school institution is responsible for implementing a framework that aims to optimize the curriculum. This framework includes information regarding: 1) What the learner must learn and understand (subject), 2) The competencies the learner must have, 3) The length of time it takes to learn (lesson hours), and 4) The learning method used (face-to-face, individual assignments, structured assignments). Basically, the curriculum aims to achieve the goal of national education, namely educating the nation's life. Intelligent means not only smart and skilled, but also has the ability and willingness to use these knowledge and skills in solving various problems in social life.

The stages of curriculum development are carried out by developing four main elements, namely objectives, materials, methods, and evaluation. Each element of the curriculum is interrelated and affects each other. This is in line with Munir's opinion.³⁰ In curriculum development, changes to one component can affect the development of other components. The curriculum development process must also pay attention to the principles that become guidelines or rules in the curriculum itself. This is very important, especially at the planning stage that reflects the characteristics of a curriculum. According to Sukmadinata, the principles of the curriculum are divided into two categories, namely: First, the principle of relevance, which includes two types of relevance: internal and external. Internal relevance means the suitability between the components of the curriculum (objectives, materials, methods, and evaluations) to achieve learning objectives and students' abilities. A curriculum is considered good if there is consistency and a coherent relationship between these components. External relevance refers to the adjustment of the curriculum to the needs of the community, both current and future. The curriculum must prepare students to be able to adapt to their social environment. Therefore, curriculum developers need to have an understanding of the current and future state of society, as well as the ability to foresee future needs. Second, the principle of flexibility. The curriculum must be adaptable, which means the systems in the curriculum provide alternatives to achieving goals by adjusting strategies and methods based on specific situations and conditions. Third, the principle of effectiveness. The curriculum focuses on achieving the goals to be achieved. As a tool to achieve goals, the types and characteristics of goals should be clear. The clarity of this goal will make it easier to determine the materials, methods, evaluation

²⁹ Camelia.

 $^{^{30}}$ MUNIR, INFORMATION AND COMMUNICATION TECHNOLOGY-BASED CURRICULUM, 2010.

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systems, as well as the curriculum models and concepts to be used, thus facilitating the implementation of the curriculum.

Fourth, the principle of efficiency. Curriculum development must consider the situation and conditions in which the curriculum is applied, so that the curriculum design can meet the principles of "practicality" or be easy to apply in the field. Fifth, the principle of continuity. The curriculum that is prepared must have continuity, both between classes and between levels of education, so that the teaching and learning process can develop continuously. For this reason, cooperation between curriculum developers at various grade levels and levels of education is needed. The special principles apply only to certain conditions or situations. For example, each level and type of education in different regions has different characteristics in several aspects. These principles reflect variations in the application of specific principles. Some of these special principles include: principles regarding educational objectives, principles regarding educational content, principles regarding the learning process, principles regarding learning aids and media, and principles regarding evaluation.

Foundations of Science and Technology in the Development of Islamic Religious Education Curriculum

The foundation of curriculum development is like the foundation of a building. A tall and majestic building will collapse if it is built on a weak foundation, so it is important to ensure a strong foundation before building the building. Likewise, the development of science and technology, which is the main driver of progress in development. The development of science and technology directly affects the development of the curriculum, which includes updating educational materials, implementing learning strategies and media, and using a better evaluation system. The subject matter should reflect the latest developments in science and technology, both related to the information obtained and how to obtain and utilize it for the benefit of the community. Of course, in the curriculum development process, the principles that have been set must still be used as a reference.³¹

Islamic Religious Education is a series of activities carried out to assist individuals or groups of students in instilling and developing Islamic teachings and values as a guide for their lives. These values are embodied in attitudes to life and applied in daily skills. In the context of the Islamic Religious Education curriculum, 21st century skills need to be considered. Students must be equipped with technological skills to be ready to face global challenges, modernization, globalization, and competition in the world of work. The Islamic Religious Education curriculum does not only focus on the ukhrawi aspect or life after death, but must also be relevant to the worldly needs of students. Islamic religious education must be connected to technological advances so that the material delivered remains up-to-date. Islamic Religious Education teachers, as the main responsible party in learning, are required to master technology and ensure that Islamic religious teachings are always relevant and needed by students. PAI teachers must also be able to contextualize religious teachings with the real lives of students, so that the material taught remains in accordance with the dynamics of their lives.

The learning method of Islam as a result of the development of information and communication technology is not only focused on the teacher-centered lecture method, but students are given the opportunity to dialectic with technology. Students are given the opportunity to search for the material taught from the internet, web, e-book, facebook, email, sms or others. So that the learning delivered by the Islamic Religious Learning Method as a result of the development of information and communication technology is

³¹ Khumaini, Isroani, and Aya, "Islamic Education Curriculum Development Policy: Curriculum and Humanistic Approach in the Digital Era."That is why

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not only focused on the teacher-centered lecture method, but students are given the opportunity to dialectic with technology. Students are given the opportunity to search for the material taught from the internet, web, e-book, facebook, email, sms or others. So that the learning delivered by the teacher is not saturated for the students, and the students feel that learning Religion is a basic need that cannot be left behind ³²

Islamic Religious Education learning based on technological values is expected to be a means to develop character education. Character development in PAI learning in schools or madrasas includes 17 main character values, namely: religiousness, honesty, intelligence, toughness, responsibility, care, democracy, politeness, discipline, love of knowledge, curiosity, confidence, respect for diversity, adherence to social rules, healthy lifestyle, awareness of rights and obligations, and hard work. Of the 17 values, there are 6 core character values that are the basis for character development at the secondary school level, namely: religiousness, honesty, intelligence, toughness, democratization, and caring. These character values need to be strengthened by teachers in every learning process, so that they can be a provision for students in facing life in society.

CONCLUSION

Based on the analysis that has been carried out, it can be concluded as follows: First, Islamic educational institutions, especially madrasas, must be able to support and anticipate the development of science and technology, both what is happening now and in the future. Second, teaching materials must reflect the development of contemporary science and technology, both related to the information obtained and how to obtain and utilize it for the benefit of society. Third, the development of the Islamic Religious Education curriculum needs to consider the needs of society, industry, lifestyle, employment, and adjust to individual needs in the context of the development of science and technology so that the curriculum remains relevant. Fourth, it is necessary to utilize, develop, and master science and technology that can have an impact on the development of human resources.

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³² Ririn Septiyani, Prasetiyo, and Praptining Rahayu, "Proceedings of the National Seminar on Research and Community Service Results (SNHP)," *Analysis of the environmental literacy profile of class X students of public high schools in Demak* 3 district (2022): 184–91.

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