

DEVELOPMENT OF SCIENCE AND TECHNOLOGY IN THE PAI CURRICULUM

Tatang Muh Nasir

SMPN 1 Kadipaten Tasikmalaya Regency, West Java, Indonesia

tatangmuhnasir25@gmail.com

Hasbiyallah

Sunan Gunung Djati State Islamic University Bandung, Indonesia

hasbiyallah@uinsgd.ac.id

Ahmad Syarif

Sunan Gunung Djati State Islamic University Bandung, Indonesia

ahm4d.syarif999@gmail.com

ABSTRACT

Education is a conscious effort to prepare students through guidance, teaching and/or training activities, as well as equipping students with knowledge for their future roles. Meanwhile, technology is the application of scientific knowledge and other sciences to solve practical problems. Thus science and technology cannot be separated. Science and technology are developing very rapidly along with the pace of development of society. Science and technology have a reciprocal relationship with education and the curriculum. Education and curriculum must be able to respond to the rapid development of science and technology, because education is an effort to prepare students to face a better future. Curriculum development for all subjects including Fiqh must be based on developments in science and technology. The development of science and technology directly has implications for curriculum development which includes objectives, materials, methods and evaluation. Technology has an important role in developing the Fiqh curriculum because Fiqh material must always be up to date with the conditions and needs of students. Fiqh learning must always be contextual to students' real lives so that its existence is always present and becomes a student's need.

Keywords: Science and Technology, Curriculum Development, Fiqh

INTRODUCTION

Education is the existence of various interactions between educators and students in an effort to help students master educational goals (Atmowidjoyo et al., 2022). Educational interactions can take place within the family, school or community (Daud, 2023). More than that, Islamic Religious Education has a strategic position in the formation of national character that has a strong foundation (Norman, 2021). Science is a systematically arranged set of knowledge produced through research or research (Nasution et al., 2022). Meanwhile, technology is the application of science to solve practical problems in life. Science and technology cannot be separated (Pangesti et al., 2017). Since the Middle Ages, science has developed rapidly. The development of science today is based on the discoveries and thoughts of ancient philosophers such as Plato, Socrates, Aristotle, John Dewey, Archimides, and others. In the beginning, human science and technology were still relatively simple, but since the Middle Ages they have experienced rapid development (Darling-Hammond et al., 2020; Lingga et al., 2023; Marlina et al., 2021). Along with the development of human thought, today many new

discoveries have been produced in various fields of human life such as social, economic, cultural, political and other life.

Science and technology have a reciprocal relationship with education and the curriculum (Faisal & Martin, 2019). Industries with advanced technology produce various kinds of tools and materials which are directly or indirectly needed in education and at the same time require reliable human resources to apply them. Educational activities require support from the use of industrial tools such as television, radio, video, computers and other equipment (Puspitarini & Hanif, 2019). The use of the tools needed to support the implementation of educational programs, especially when the development of increasingly sophisticated communication technology products, demands adequate knowledge, skills and abilities from teachers and other educational program implementers (Mutaqin et al., 2024).

Education and curriculum must be able to respond to the rapid development of science and technology, because education is an effort to prepare students to face a better future (Nugroho et al., 2024). Curriculum development for all subjects including Fiqh must be based on developments in science and technology. The development of science and technology directly has implications for curriculum development which includes the development of educational content/materials, the use of learning strategies and media, and the use of evaluation systems (Liam et al., 2023; Pattier, 2021; Warner & Myers, 2010). Education and curriculum must be able to respond to the rapid development of science and technology, because education is an effort to prepare students to face a better future. Curriculum development for all subjects including Fiqh must be based on developments in science and technology (Khumairoh, 2022). The development of science and technology directly has implications for curriculum development which includes the development of educational content/materials, the use of learning strategies and media, and the use of evaluation systems.

One of the subject matter that is mandatory in the curriculum is the subject of Islamic Religious Education. However, so far the subject of Islamic Religious Education, abbreviated as PAI, has become less meaningful for the practice of spiritual values. This is because PAI is more devoted to learning aspects of religious theory and knowledge that requires understanding of the content of the subject matter. Therefore, the emphasis on practice in PAI lessons is actually reduced. From there, there must be development of the PAI curriculum by theoretically examining the problems that exist in the classroom learning process. In this case, the author will try to criticize and create a practical flow in developing the PAI curriculum with theories that are connected to the realities of today's life while also trying to explain how technology is the basis for curriculum development, especially Fiqh.

RESEARCH METHODS

According to the type of research, this research is qualitative research, where researchers must use themselves as key instruments as research data collectors. And try

to dig up information that is in accordance with the research focus through respondents, researchers are expected to be flexible and reflective and remain distant. Qualitative research is research that has the characteristics of the data being expressed in a natural setting or as it is (natural setting), without being changed in the form of symbols or numbers (Nawawi, 2020). In essence, qualitative research is used because of three considerations, namely: (1) adapting qualitative methods is easier when dealing with multiple realities; (2) this method presents directly the relationship between researchers and informants; and (3) this method is more sensitive and more adaptable to the many sharpening, joint influences of the patterns encountered (Moleong, 2019).

The approach used in this research is a qualitative approach, which aims to understand the phenomena experienced by research subjects, for example behavior, perceptions, views, motivations, daily actions, holistically and using description methods in the form of words and language (narrative) in a special natural context and by utilizing various natural methods (Susanty et al., 2023). This approach is used so that the data obtained is descriptive data in the form of written and spoken words from informants as well as documents or observed behavior. Qualitative research will search for and obtain natural data based on reality and photocopy what is called proctayal, that is, all data elements are removed.

RESULTS AND DISCUSSION

Understanding Technology

From experts, we often hear the statement that science is not just for science. This means that the development of science is expected to make a contribution to other areas of life or science. Contributions in the form of the use or application of a field of science to other fields are called technology as stated by Kast and Rosenweig *Technology is the art of utilizing scientific knowledge*. (Agustian & Salsabila, 2021). Formulate more fully and clearly about technology, namely how to do something to meet human needs with the help of tools and reason (hardware and software) so as to extend, strengthen, or make the human body's limbs, five senses and brain more effective. According to Wikipedia, technology is the entire means of providing goods necessary for the continuity and comfort of human life. Harahap, Poerbahawadja (Utama, 2012) says technology is: 1) Science that investigates how techniques work, 2) Science that is used in factories and industries.

The most rapid development in the last few decades has been the development of transportation, communication and information technology, as well as print media. The greatest technological developments in the mid-20th century concerned space exploration. Discoveries in the fields of physics, chemistry and mathematics develop space and military technology. The world's rapid progress in the fields of information and technology in the last two decades has had an impact on human civilization beyond the scope of previous human thinking. This influence can be seen in shifts in the social, economic and political order that require a new balance between values, thoughts and

ways of life that apply in global and local contexts. In addition, in the current age of knowledge, a knowledgeable society is needed through lifelong learning with high quality standards. The nature of the knowledge and skills that society must master is very diverse and sophisticated, so a curriculum is needed that is accompanied by meta-cognitive abilities and competencies to think and learn how to learn (learning to learn) in accessing, selecting and assessing knowledge, as well as dealing with ambiguous situations and anticipatory of uncertainty.

The Role of Science and Technology in Education

Education is a conscious effort to prepare students through guidance, teaching and/or training activities, as well as equipping students with knowledge for their roles in the future. Meanwhile, technology is the application of scientific knowledge and other sciences to solve practical problems. Thus science and technology cannot be separated. Science and technology are developing very rapidly along with the pace of development of society. Education has had quite a big influence from science and technology (Faisal & Martin, 2019; Malik, 2018).

Education is very closely related to social life, because education is one of the social aspects. Education is not limited to formal education, but also non-formal education. Because education includes all one's own efforts or external efforts to increase knowledge and skills, acquire skills, and form certain attitudes. The development of science and technology, both directly and indirectly, demands the development of education. The direct influence of the development of science and technology is to provide content or materials that will be delivered in education. The indirect influence is that the development of science and technology causes the development of society, and the development of society gives rise to new problems that require solutions with new knowledge, abilities and skills developed in education.

Therefore, the curriculum should be able to accommodate and anticipate the pace of development of science and technology, so that students can keep up with and at the same time develop science and technology for the benefit and survival of humanity. Advances in science and technology have brought humans to a time that is different from previous times, even times that were never imagined in the past. The emergence of technological results such as transportation technology results, which not only enable humans to explore the world, even outer space. Likewise, advances in information and communication technology have enabled humans to find out information from various parts of the world in a short time.

However, this progress does not only have positive impacts, at the same time there are also various negative impacts of technological progress which often cause anxiety. Progress in transportation, especially the increase in large numbers of vehicles in big cities, often results in traffic jams, because they are not accompanied by adequate road facilities, causing many accidents due to driver negligence, etc. The results of information technology which currently worries the entire community, with its

facilities, which make it easier for users, including children, to access pornography, violence, etc., which causes friction in values, norms and culture. The emergence of these problems causes the educational tasks implemented in the curriculum to become increasingly complex. Schools' tasks become increasingly difficult, and sometimes they are no longer able to carry out all of society's demands. In fact, as time progresses, tasks that previously were not the school's responsibility are now the school's responsibility. Schools are not only tasked with imparting and passing on knowledge, but also must provide skills, they must also instill character and values.

With such heavy educational duties and responsibilities, the curriculum as an educational tool must always be updated to adapt to changes that occur in both content and process, following the rapid development of science and technology. There are important things that curriculum developers need to pay attention to and anticipate, as said by Suparman (2020) are: a. Lifestyle Changes Advances in technology have played a major role in changing lifestyles. The use of telephones which makes it easier to communicate, the emergence of TV stations which offer various programs for twenty-four hours ranging from education, information to entertainment with various variations, technology in the health sector and so on, are factors that encourage change. lifestyle and even the social order of society.

The pattern of life in modern industrial society according to Suparman (2020) has different characteristics from the agrarian lifestyle. These differences can be seen: 1. From work patterns. In agricultural societies, work patterns are very regular, taking place during the day at fixed times. This is not the case in industrial society, apart from the fact that people spend quite a long time working, they also have irregular patterns. Facts like this have consequences for the methods and strategies that educational institutions must prepare. The curriculum must be designed to be able to form productive people who are not only able to work, but can also love their work. 2. A lifestyle that is very dependent on technological results. In industrial society, there are many types of jobs that depend heavily on technology, from housewives to office jobs. These skills must of course be prepared by educational institutions. 3. Lifestyle in the new economic system. This change in lifestyle is characterized by the use of banking and insurance services products for economic activities, such as saving, credit and business capital. Likewise, the proliferation of shopping centers in multi-storey buildings has replaced traditional markets.

Changes in Social and Political Life

The fast-moving flow of globalization has brought changes in social and political life to all corners of the world, including social and political life. In Indonesia, these changes were marked by the emergence of the reform movement which brought down the New Order regime for 32 years. With the advent of the reform era, everything should change. Education must be directed at creating critical and democratic humans. For this

reason, changes towards transparency must be fully captured by curriculum developers. Democratic life must animate the content of the curriculum.

In connection with the above, curriculum developers in carrying out their duties must do the following: a. Study and understand community needs as formulated in laws, government decisions, regional regulations and so on. b. Analyze the culture of the community where the school is located. c. Analyzing regional strengths and potentials d. Analyzing labor requirements and demands e. Interpret individual needs within the framework of societal interests. Curriculum development is the process of planning and compiling a curriculum by a curriculum developer and activities carried out so that the resulting curriculum can become teaching materials and references used to achieve national education goals. Curriculum development refers to the activity of producing a curriculum. Development activities consist of preparation, implementation, assessment and refinement activities to produce something. The development of a technology-oriented curriculum is a necessity that cannot be postponed any longer to be put into practice in primary and secondary education institutions now to answer the various needs of students in society.

Technology and Curriculum Transformation MA

We have to see how technology affects schools throughout the world, including in Indonesia. The proliferation of cellphones and digital music players among MA students shows that technology has changed their lives in recent years. Cell phones are now fashion accessories that practically everyone owns, and MP3 music players such as iPods are everywhere. Students can be seen carrying iPods, cell phones, video cameras, laptops and digital cameras wherever they go. Websites such as Facebook and MySpace change the way people communicate and socialize whether at school, at home on campus or elsewhere. Media content enters schools every minute via cellphones, internet, email, SMS and general entertainment (music, videos, blogs, etc.).

To compete with the growing media and technological environment in society, Parkay, Hass and Anctil (Parkay et al., 2014) said "educators must incorporate technology into the modern curriculum". They quoted Prensky as saying "rejecting today's digital technology will completely kill children's education. They live in a different world and demand something faster than what is conveyed and presented by the teacher. According to the editor of the journal Technological Horizons in Education (T.H.E) in (Parkay et al., 2014) technology must be reflected in the curriculum development process. In the journal it says "We need to bring our curriculum up to 21st century reality. We need to access our students' knowledge and skills and a way that is consistent with how that knowledge and those skills are used in the real world. This is the context in which we should be integrating technology throughout all of curriculum and instruction". To create effective Curriculum Development leadership, school leaders must understand and master technology. In the past, students went to school with notebooks, pencils, and pens; Nowadays, children come to school with cellphones,

laptops and iPods. In today's digital era, electronic media is growing attractively, influencing and spreading to various aspects.

Bill Gates quoted by Parkay, Hass and Anctil (Parkay et al., 2014) in his article Vision 2020: Transforming Education and Training through Advanced Technology describes the influence of technology on the curriculum "The internet has brought an unprecedented level of great educational content to wide audiences, encouraging teachers to share curriculum and resources worldwide. E-mail has facilitated improved communication among administrators, teachers, students, parents and educational researchers, and emerging Web services technologies will create further opportunities for collaborative learning. Increased industry and government funding in learning science promises to vastly improve the ways technology is applied to learning.

And in the years ahead, a whole generation of kids will leave college and enter the workforce with a broad understanding of the ways they can use technology effectively in their jobs. Many education departments in various countries have developed technology competency guides that curriculum leaders can use in designing staff development programs for teachers. Since the early 1980s curriculum leaders have used computers as a teaching delivery system in presenting information to students. They incorporate the latest technology to stimulate higher thinking, creativity, and problem solving. Curriculum leaders understand that technology is a tool for creating wealth, stimulating an environment that fosters collaboration, inquiry and decision making.

Technology has transformed teaching and learning in schools. Every day students communicate via the internet with other students around the world. The influence of technology on the curriculum as stated by Bill Gate in Parkay, Hass and Anctil (Parkay et al., 2014) : *In the next view years-a time I call the Digital decade-we'll see computing become a much more significant and indispensable part of all our lives."* *The CEO Forum on Education and Technology (2001) quoted by Parkay, Hass and Anctil (Parkay et al., 2014) emphasizes that teachers must use technology to help students develop "21st century skills", namely:* a. Digital Age Literacy, includes: 1. Basic, scientific and technological literacy 2. Visual and information literacy 3. Cultural literacy and global awareness b. Inventive Thinking, includes: 1. Adaptability/managing complexity 2. Curiosity, creativity, and risk taking 3. High order thinking and sound reasoning c. Effective communication, including: 1. Teaming, collaboration, and interpersonal skills 2. Personal and social responsibility 3. Interactive communication d. High Productivity, includes: 1. Prioritizing, planning and managing for results 2. Effective use of real world tools 3. Relevant, high-quality products.

According to Saripudin (Saridudin, 2022) predicts that future technology in the field of electronics will grow rapidly 1,000,000 times faster since the development of ENIRC (Electronic Numerical Integrator and Calculator), which was the first computer

introduced in 1946. How much and how fast information can be processed, technology itself will changing the nature of schooling and the classroom itself.

The classroom of the future will look very different from the classroom that exists today. Because technological skills are needed in the workplace, a high degree of technological literacy is required in curriculum development, implementation and evaluation. So skills in the field of technology must be an important part of developing professional curriculum leaders. Today's curriculum developers, together with people interested in the world of education, will become more complex in understanding the strengths and limitations of technology as a tool for improving the curriculum. 4. Science and Technology Foundation in Fiqh Curriculum Development. The curriculum is a set of lessons that must be taken in the learning process to become a reference and orientation for education. Fiqh is all activities carried out by a person to help a person or group of students in instilling and developing Islamic teachings and values to serve as a view of life, which is manifested in an attitude of life and developed in daily life skills (Saridudin, 2020).

21st century skills as explained by Parkay, Hass and Anctil above currently need to be developed in the development of the Fiqh curriculum. Students need to be equipped with technological skills so that they are ready to face global challenges, modernization, globalization and especially in facing the world of work. The Fiqh curriculum should not only deal with the hereafter or everyday problems, but should be in touch with the interests of students in the world. Fiqh must be in contact with the world of technology so that the material developed is not out of date.

Fiqh teachers as the main control in Fiqh learning are required to master technology, they must make efforts so that the presence of Islam in society is always missed and needed by students. Fiqh teachers must be able to contextualize religious teachings with students' real-world lives, so that Fiqh materials are always up-to-date with their real-world lives. Islamic teaching methods as a result of the development of information and communication technology are not only focused on teacher-centered lecture methods, but students are given the opportunity to engage in dialectics with technology. Students are given the opportunity to search for taught material from the internet, web, e-books, Facebook, email, SMS or others. So that the learning delivered by the teacher is not boring for students, and students feel that learning religion is a basic need that cannot be abandoned. Fiqh learning based on technological values is expected to become a medium for developing character education.

The development of character education in Fiqh learning at madrasas includes the development of 17 main characters, namely: religiousness, honesty, intelligence, toughness, responsibility, caring, democracy, politeness, discipline, love of knowledge, curiosity, self-confidence, respect for diversity, obedience to social rules, healthy lifestyle, awareness of rights and obligations, and hard work. Of the 17 values, there are 6 main character values which are the starting point for character development in

secondary school, namely religiousness, honesty, intelligence, toughness, democracy and caring (Saridudin, 2022). These character values must be strengthened by teachers in every lesson, so that they can become provisions when students live their lives in society.

CONCLUSION

The development of science and technology has greatly influenced the world of education on this mother earth, namely Indonesia. Thus, education must keep pace with current developments, so that technological and scientific developments can be utilized appropriately in the field of education. Science and technology have a reciprocal relationship with education and the curriculum.

Education and curriculum must be able to respond to the rapid development of science and technology, because education is an effort to prepare students to face a better future. Curriculum development for all subjects including Fiqh must be based on developments in science and technology. The development of science and technology directly has implications for curriculum development which includes objectives, materials, methods and evaluation. Technology has an important role in developing the Fiqh curriculum because Fiqh material must always be up to date with the conditions and needs of students. Fiqh learning must always be contextual to students' real lives so that its existence is always present and becomes a student's need.

Curriculum development is not only utilized by the curriculum in general but can be utilized by the formation or development of the Islamic religious education curriculum. For example, you can utilize media that currently exists, namely computers, laptops, books, cellphones, and so on. By utilizing the media and significant developments over time, it is hoped that the curriculum can also be developed to guide better education. And the figures' explanations about the Islamic religious education curriculum were used as a theoretical reference used to develop the Islamic religious education curriculum more effectively in the future. Future research is also expected to use more sources to expand the repertoire of Science and Technology Development in the PAI Curriculum.

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