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SWOT Analysis of Scientific Learning Implementation Strategies at MTs Nurul Iman, Cigalontang Islamic Boarding School

Ali Abdul Halim Mahmud
Universitas Siliwangi, Indonesia
202151146@student.unsil.ac.id
Sinta Verawati Dewi
Universitas Siliwangi, Indonesia
sintaverawati@unsil.ac.id
Eko Yulianto
Universitas Siliwangi, Indonesia
ekoyulianto@unsil.ac.id

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Abstract

Scientific learning is a major requirement of the 2013 Curriculum in Indonesia; however, its implementation in pesantren-based schools remains limited because learning processes are still dominated by direct instruction methods. This condition creates challenges for integrating scientific learning within Islamic boarding school education. **Purpose.** This study aims to analyze strategies for implementing scientific learning at MTs Nurul Iman Pondok Pesantren Cigalontang using SWOT analysis. **Method.** This study employed a qualitative descriptive method. Data were collected through interviews, observations, and documentation involving teachers and school stakeholders. The data were analyzed using SWOT analysis to identify strengths, weaknesses, opportunities, and threats related to the implementation of scientific learning. **Findings.** The findings reveal that the main strengths lie in the pesantren's educational resources and supporting facilities. However, weaknesses include students' low analytical skills, limited learning independence, low motivation, and insufficient teacher training. Opportunities include the integration of moral and academic values, while threats involve students' resistance to scientific learning, limited instructional time, and changing educational policies. **Conclusion.** This study concludes that the successful implementation of scientific learning in pesantren-based schools requires strategic integration between modern pedagogical approaches and pesantren educational traditions. **Originality.** This study provides a contextual SWOT-based framework for implementing scientific learning in pesantren-based schools.

Keywords: *SWOT Analysis, Scientific Learning, Islamic Boarding School.*

INTRODUCTION

The scientific learning is a learning method that integrates scientific knowledge, attitudes, and skills to prepare students to face the challenges of a constantly evolving world by applying innovative and relevant learning strategies.[1][2][3] This scientific learning is a learning approach that has been established by the Ministry of Education and Culture in the 2013 Curriculum (K13). Therefore, all levels of school education are required to use the 2013 Curriculum with a scientific learning approach in the learning activity process, including Islamic boarding school-based schools. This is based on Law No. 18 of 2019 concerning Islamic Boarding School, which stipulates that Islamic boarding school curricula can use the Ministry of Education and Culture's curriculum (for elementary, junior high, and high school levels) or the Ministry of Religious Affairs' curriculum (for MI level).[4] This provision aims to ensure that education in Islamic boarding school is on par with general education, so that Islamic boarding school graduates have competencies equivalent to those of general school graduates.

The scientific learning encourages students to actively participate, think critically and creatively, and develop scientific attitudes that are beneficial in daily life and their careers. Traditionally, Islamic boarding school have focused more on religious studies, but with the integration of this curriculum, students can gain a broader understanding and better readiness to pursue higher education by mastering various disciplines. The integration of the scientific learning in Islamic boarding school learning is part of an effort to realize a holistic curriculum that aligns with the characteristics of Islamic education. By combining the scientific learning and a curriculum based on Islamic values, Islamic boarding school can provide comprehensive and balanced education. This ensures that students not only excel in religious knowledge, but are also competent in general science, so that they are ready to face various challenges in the future.[5][6][7]

Although the government has established scientific as a learning approach in the Islamic boarding school environment, the fact is that in the field, there are still schools

[1] Hanafiah et al., "Character Education's Impact On Student Personality: Curriculum And School Practices Review," *At-Ta'dib* 19, no. 1 (2024): 51–69, https://doi.org/10.21111/attadib.v19i1.12047.

[2] Ronilo P. Antonio, "Effectiveness of Blended Instructional Approach in Improving Students' Scientific Learning Outcomes: AMeta-Analysis," *Journal of Higher Education Theory and Practice* 22, no. 5 (2022): 221–39, https://doi.org/10.33423/jhetp.v22i5.5217

[3] Dian et al., "Implication And Application MBKM's Curriculum In Education (Madrasah And Universities)," *At-Ta'dib* 18, no. 1 (2023): 106–22, https://doi.org/10.21111/attadib.v18i1.9910.

[4] President-RI, "Law (Law) Number 18 of 2019 concerning Islamic Boarding Schools," 1 Jakarta: President of the Republic of Indonesia § (2019).

[5] Nadia Nur Izza Ni'ami, Salsabila Khoirun Nafis, and Bagus Wahyu Setyawan, "The Application of Mathematical Principles in Student Contributions at the Subulussalam Tulungagung Islamic Boarding School, East Java," *Edumatic Journal: Journal of Mathematics* Education 4, no. 2 (2023): 24–31, https://doi.org/10.21137/edumatic.v4i2.763.

[6] M Fathun Niam, *ISLAMIC RELIGIOUS EDUCATION IN THE NATIONAL CURRICULUM*, ed. Neneng Sri Wahyuni, 1st ed., vol. 19 (Bandung: Widina Media Utama, 2024).

[7] Ira Kusumawati and Nurfuadi, "Integration of Islamic Boarding School Curriculum in the National Curriculum in Modern Islamic Boarding Schools," *Sanskara Education and Teaching* 2, no. 01 (2024): 1–7, https://doi.org/10.58812/spp.v2i01.293.

that do not use scientific learning as an approach to their learning. One of them is MTs Nurul Iman Cigalontang. MTs is a junior high school (madrasah tsanawiyah) based on an Islamic boarding school, namely the Nurul Iman Cigalontang Islamic Boarding School. This Islamic boarding school is an educational institution that adopts three main curricula: the Islamic boarding school curriculum from KMI Darussalam Gontor, the general curriculum from the Ministry of Education and Culture, and the tahfidz curriculum from Darul Qur'an Mulia Bogor. These three curricula are designed to produce students who excel not only in general knowledge but also in religious understanding and Qur'an memorization.[8]

Learning at Madrasah Tsanawiyah (MTs) Nurul Iman is instructed to use the curriculum set by the Ministry of Education and Culture, namely the 2013 Curriculum (K13), which should use scientific learning as an approach in its learning activities. However, based on initial observations and interviews with one of the mathematics teachers, vice principal of curriculum, students in grades VII to IX, and the principal of MTs Nurul Iman, it is known that the implementation in the learning process is still dominated by a direct teacher-centered approach. This can be seen from the use of the dominant lecture method in the learning process, the lack of practicum activities that actively involve students, the limited use of technology and interactive media, and the lack of collaboration between students in learning activities. In addition to using a direct approach, MTs Nurul Iman also still implements a traditional curriculum that focuses more on religious education, citing limited facilities and a lack of student learning independence.

There are many Islamic boarding schools and Islamic boarding school-based schools that have succeeded in implementing and implementing scientific learning in their learning activities. Research from Sumardi et al. (2024) states that the application of the scientific learning model at the Al-Rusydiny Islamic Boarding School, Jeromaru District, East Lombok Regency provides many benefits, including increasing teacher creativity and increasingly critical ways of thinking of students.[9] Antika and Muyassaroh (2025) in their research at the Mansyaul Ulum Ganjaran Islamic Boarding School,[10] as well as research by Kamaliyah et al. (2025)[11] at the Al-Yasini Integrated Islamic Boarding School, these two studies show the results that scientific learning at

[8] Luc Behaghel, Clément de Chaisemartin, and Marc Gurgand, "Ready for Boarding? The Effects of a Boarding School for Disadvantaged Students," *American Economic Journal: Applied Economics* 9, no. 1 (2017): 140–64, https://doi.org/10.1257/app.20150090.

[9] Lalu Sumardi, Muh. Zubair, Bagdawansyah Alqadri, Sawaludin, Ahmad Hudori, and M. Alhadika, "Pelatihan Penerapan Model Pembelajaran Saintifik di Pondok Pesantren Al-Rusydiny Kecamatan Jeromaru Kabupaten Lombok Timur," *Jurnal Pengabdian Magister Pendidikan IPA* 7, no. 3 (2024): 895–899.

[10] Aisyah Nindi Antika and Siti Muyassaroh, "Integrasi Islam dan Sains di Pondok Pesantren: Upaya Mewujudkan Multidisipliner di Era Globalisasi (Study Kasus di Pondok Pesantren Mansyaul Ulum Ganjaran)," *Ihsan: Jurnal Pendidikan Islam* 3, no. 1 (2025): 358–374.

[11] Dina Kamaliyah, Parmujianto, and Fahin Tharaba, "Integrasi Pembelajaran Ilmu Agama dan Sains dalam Sistem Pendidikan Terpadu di Pondok Pesantren Terpadu Al-Yasini," *JIIP: Jurnal Ilmiah Ilmu Pendidikan* 8, no. 7 (2025): 7584–7589.

Islamic boarding schools produces positive changes. Students are more open and critical of science and able to relate scientific concepts to religious values. Yusuf and Ali (2025) in their research also stated that the integration between scientific learning and traditional learning in Islamic boarding schools can improve the quality of education, as well as strengthen the role of Islamic boarding schools in building a generation of students who are ready to face the challenges of the times without losing their Islamic identity.[12] All this shows that scientific learning in Islamic boarding school-based schools can create a generation that is academically intelligent and has high morality, because they have a balance between general knowledge and religious knowledge.

Given the conditions in MTs Nurul Iman Cigalontang Islamic Boarding School that show the dominance of direct learning, even though the scientific learning has been established by the government, and by looking at previous studies regarding the implementation of scientific learning in Islamic boarding schools, this gives rise to a significant challenge. The emergence of curriculum differences also adds complexity to the learning process. Therefore, to minimize negative impacts and avoid bigger problems in the application of learning, especially scientific learning, comprehensive actions are needed. In this context, SWOT analysis is a very relevant tool to comprehensively identify the existing strengths, weaknesses, opportunities, and threats,[13] in order to formulate more effective strategies to improve the quality of learning at MTs Nurul Iman through scientific learning.

Based on the background that has been described above, this study aims to identify strengths, weaknesses, opportunities, and threats in the application of scientific learning in learning process, especially in subjects that use the Ministry of Education and Culture's curriculum. By understanding the factors that affect the effectiveness of learning in Islamic boarding schools, this research is expected to provide strategic recommendations that can be applied to improve the quality of learning, ensure alignment between national education policies and practices in the field, and support the creation of a more innovative, holistic, and oriented education system that is oriented towards the development of academic competencies and Islamic values for students.

METHOD

This study employs a qualitative approach using the method of library research. Library research enables the researcher to explore and reconstruct scientific ideas from primary and secondary sources critically, systematically, and in-depth, making it highly relevant to the research objectives.

[12] Yoseph Salmon Yusuf and Nur Ali, "Strategi Pembelajaran Integratif di Pesantren dengan Menggabungkan Tradisi dan Modernitas," *JIES (Journal of Islamic Education Studies)* 3, no. 2 (2025): 173–180.

[13] Gina Rohadatul Aisyi and Lutfi Zulkarnain, "SWOT ANALYSIS IN AN EDUCATIONAL INSTITUTION (Case Study: Baitul Qur'an Islamic Boarding School, Depok)," *Jurnal Ekonomi Dan Perbankan Syariah* 8, no. 1 (2020): 85–101, https://doi.org/10.46899/jeps.v8i1.177.

This study uses a qualitative approach with a case study design. The case study was chosen because it allows an in-depth exploration of the phenomenon that occurs at MTs Nurul Iman Cigalontang related to the implementation of scientific learning strategies in the education system based on Islamic boarding school. This research was carried out at MTs Nurul Iman Cigalontang, an educational institution based on Islamic boarding school that implements a boarding school system. Participants in this study include principals, teachers, and students of MTs Nurul Iman who are involved in the learning process. The selection of participants was carried out by *purposive sampling* by considering their involvement in the implementation of the Ministry of Education and Culture's curriculum and scientific approach.

Data collection in this study was carried out through three techniques, namely in-depth interviews, participatory observation, and documentation. The data collection process is presented in Figure 1.[14]

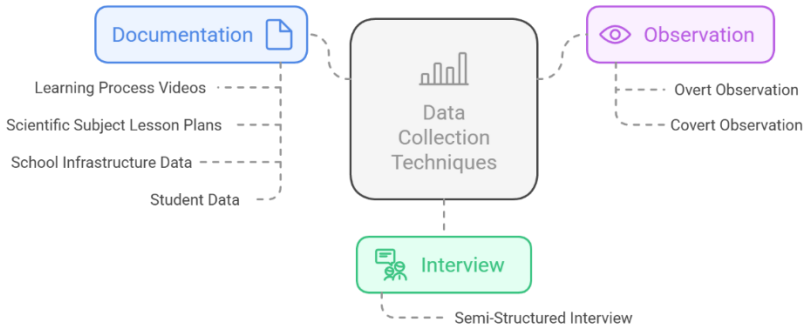

Figure 1. Research Data Collection Techniques

Figure 1 explains the data collection techniques used in the study to obtain comprehensive information about learning strategies in schools. Through interviews, participatory observations, and documentation, researchers seek to understand the challenges and views that exist in the application of a scientific approach to learning process.

Semi-structured interviews were conducted with principals and teachers to obtain information about the learning strategies applied, the obstacles faced, and their views on the scientific learning. This interview process aims to explore a deeper perspective from educators regarding the learning practices they carry out. Observations are made during the learning process in the classroom, frankly or invisibly. The researcher observed the methods used by teachers, student interaction in learning, the use of learning media, and the level of student involvement in the learning process. This technique allows researchers to obtain more accurate and real-time data regarding learning dynamics in the classroom. The documentation used in this study consists of

[14] Sugiyono, *Quantitative, Qualitative, and R&D Research Methods* (Bandung: Alfabeta, CV, 2017), https://massugiyantojambi.wordpress.com/2011/04/15/teori-motivasi/.

videos of the learning process, lesson plans (lesson plans) for mathematics subjects using a scientific approach, data on school infrastructure, and student data.

The data that was successfully collected was then analyzed using the Miles and Huberman model. The data analysis process is presented in Figure 2.[15]

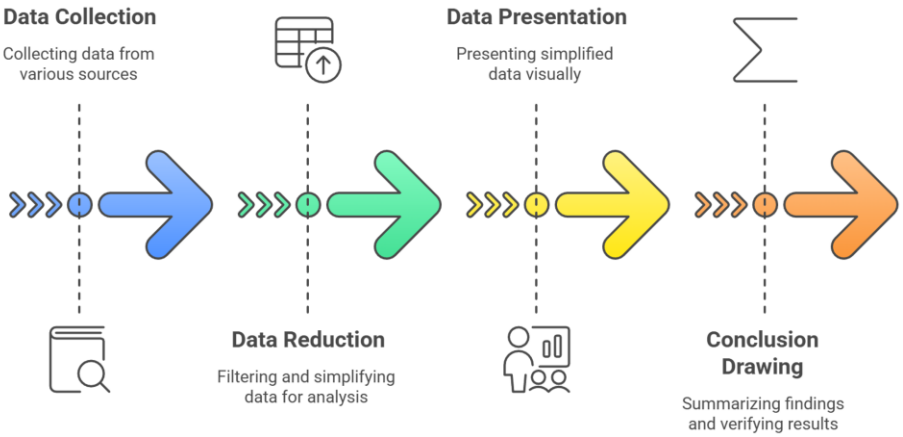

Figure 2. Research Data Analysis Process

Figure 2 illustrates the qualitative data analysis technique according to Miles & Huberman, which consists of four main stages. The first stage is to collect data from observations, interviews, and documentation. Once the data is collected, the next step is to filter, summarize, and simplify the data. Data reduction aims to take relevant information and discard less important data so that the analysis is more focused and systematic. The reduced data is then presented in a form that is easier to understand, such as tables, graphs, diagrams, or descriptive narratives. Good data presentation helps in understanding patterns, relationships, or trends that arise from the data that has been collected. The final step is to conclude the findings based on the data that has been analyzed. These conclusions must be verified and tested for validity to ensure that the results of the study truly reflect the phenomenon being studied.

THEORETICAL REVIEW

SWOT Analysis

SWOT (*Strengths, Weaknesses, Opportunities, and Threats*) analysis is one of the stages in strategic management which is an environmental analysis approach. SWOT analysis can be applied by analyzing and sorting out various things that affect the four

[15] Matthew B Miles and A Michael Huberman, *Qualitative Data Analysis*, *Library of Congres Cataloging in Publication Data*, second, vol. 1304 (California: SAGE Publication, Inc, 2014).

factors, where the applications are: a) how *the strengths* are able to take *advantage* of the existing opportunities; b) how to overcome weaknesses that prevent *advantages* from existing opportunities; c) how strengths are able to face existing *threats*; d) how to overcome weaknesses that are able to make *threats* real or create a new threat. In the implementation of educational institutions (schools), SWOT analysis can help allocate resources such as budgets, infrastructure, human resources, school facilities, environmental potential, and so on more effectively. In the SWOT analysis on the implementation of scientific learning in the 2013 curriculum, there are several important aspects that can be seen in Table 1.[16][17][18]

Table 1. SWOT Analysis of Scientific Learning Curriculum 2013

SWOT	Description
Strengths	1. Teachers can communicate effectively and efficiently 2. Teachers can assess objectives 3. Constructivist-based learning 4. Learning that involves a scientific approach
Weaknesses	1. Teachers who are less creative and innovative 2. Limited resources and infrastructure
Opportunities (Peluang)	1. Opportunities to improve the quality of education through training and discussion 2. Opportunities to use technology in learning
Threats (Ancaman)	1. Reliance on improper technology can cause problems 2. Lack of quality of education that can lead to a decline in student achievement

The SWOT analysis presented in Table 1 above provides a comprehensive overview of scientific learning in the 2013 Curriculum. By identifying strengths, weaknesses, opportunities, and threats, we can understand the factors that affect learning effectiveness. Existing strengths, such as teachers' communication skills and constructivistic approaches, form a strong foundation for educational development. However, challenges such as lack of creativity and limited resources need to be overcome so that learning can take place optimally. In addition, opportunities to improve the quality of education through training and technology should be taken advantage of, while potential threats, such as reliance on inappropriate technology,

[16] Emet Gürel and Merba Tat, "SWOT ANALYSIS: A THEORETICAL REVIEW," *He Journal of International Social Research* 10, no. 51 (2017): 994–1006.

[17] Mashuri Mashuri and Dwi Nurjannah, "SWOT Analysis as a Strategy to Increase Competitiveness," *JPS (Journal of Sharia Banking)* 1, no. 1 (2020): 97–112, https://doi.org/10.46367/jps.v1i1.205.

[18] Hasriyani Syarifuddin, "Implementation of a Scientific Approach in Indonesian Learning Based on the 2013 Curriculum," *J-HEST Journal of Health Education Economics Science and Technology* 5, no. 2 (2023): 259–69, https://doi.org/10.36339/jhest.v5i2.90.

should be watched out for. With this understanding, strategic steps can be formulated to improve the quality of scientific learning in schools.

Since SWOT analysis is a strategic management tool used to identify and analyze the Strengths, Weaknesses, Opportunities, and Threats of a particular situation, this analysis serves to provide a better understanding of the factors that affect the success or failure of an scientific learning approach through an instrument presented in Table 2.[19]

Table 2. Research Instruments with SWOT Analysis

SWOT Instruments	Description
Strengths	1. What are the main strengths of the scientific learning approach at Nurul Iman Cigalontang Islamic Boarding School? 2. How can a scientific approach to learning be a strength in the context of the Islamic boarding school? 3. Are there any special resources or facilities that support the success of learning in the Islamic boarding school?
Weaknesses	1. What are the weaknesses that may be related to the application of a scientific learning approach in the context of Islamic boarding school? 2. How may the constraints of scientific learning affect the weaknesses of the education system in the Islamic boarding school? 3. Are there any internal factors that can be an obstacle in adopting or implementing certain learning methods?
Opportunities (Peluang)	1. What opportunities can be well utilized by this scientific learning approach in Islamic boarding schools? 2. How can the application of scientific learning create new opportunities for the development of Islamic boarding schools as a whole? 3. Are there any trends or changes in the field of education that can be taken as an opportunity to improve the quality of learning?
Threats (Ancaman)	1. What threats may arise due to the application of scientific learning in this Islamic boarding school? 2. How can scientific learning face challenges or resistance from the Islamic boarding school community or the surrounding community? 3. Are there external factors such as changes in education policy that can be a threat to the implementation of certain learning approaches?
Integration and Collaboration	1. How can the potential integration between the implementation of scientific and scientific learning provide a competitive advantage for Islamic boarding schools?

[19] Antonio, "Effectiveness of Blended Instructional Approach in Improving Students' Scientific Learning Outcomes: AMeta-Analysis."

SWOT Instruments	Description
	2. Are there opportunities for collaboration with institutions or external parties to increase the effectiveness of learning at this Islamic boarding school?
Influence on Student Achievement	1. How can the implementation of scientific and scientific learning affect the academic achievement of students at the Nurul Iman Cigalontang Islamic Boarding School? 2. Is there any indication that either approach has a more positive impact on students' academic development?

Scientific Learning

Scientific learning is a learning method that prioritizes the scientific process in understanding scientific concepts. In this approach, students not only receive information passively, but also actively engage in the process of knowledge discovery through observation, experimentation, and reflection. Scientific learning has several main characteristics, including:[20] a constructive (students are directly involved in the learning process through practical activities and experiments), critical (students are invited to think critically and analytically in evaluating information and data), collaborative (learning is often carried out in groups, encouraging discussion and cooperation between students), problem-based (students are faced with real problems that require solving through a scientific approach), and reflective (students are invited to reflect on their learning process and outcomes).

Scientific learning usually involves several stages, such as observing (students make observations on existing phenomena or problems), asking questions (students formulate questions based on observations made), formulating hypotheses (students make conjectures or hypotheses that can be tested), conducting experiments (students conduct experiments to test hypotheses that have been made, analyzing data (students collect and analyze data from experiments carried out), drawing conclusions (students draw conclusions based on data analysis and comparing them with the initial hypothesis), and presenting results (students present the results of their findings, either orally or in writing).

The objectives of scientific learning include developing critical thinking skills where students are encouraged to think logically and critically, improve their understanding of science concepts in depth, improve practical skills through experiments and field activities, and prepare students to face challenges in the real world with a scientific approach. In the 2013 Curriculum in Indonesia, scientific learning is integrated as a key approach in science teaching. Teachers are expected to

[20] Syarifuddin, "Implementation of Scientific Approach in Indonesian Language Learning Based on the 2013 Curriculum."

design learning activities that encourage students to actively participate and apply scientific methods in learning. The benefits of scientific learning are presented in Figure 3.

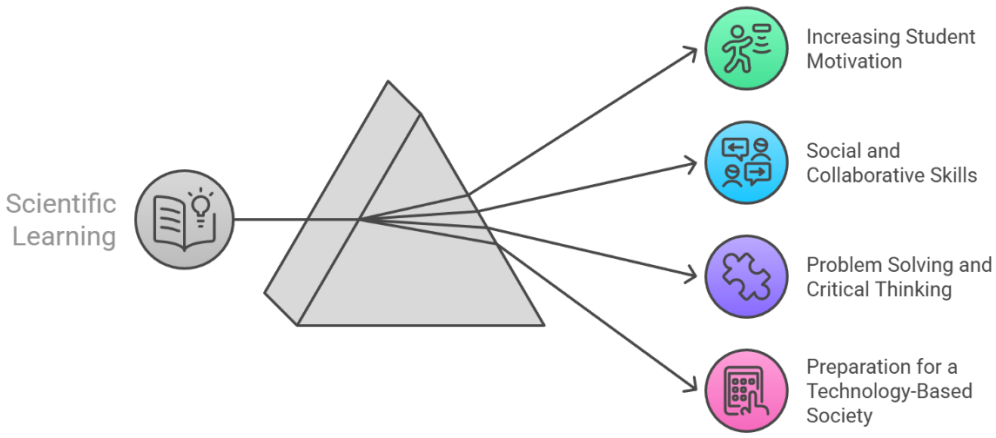

Figure 3. Benefits of Scientific Learning

One of the main benefits of scientific learning is increased student motivation and interest in science. With an interactive and experiment-based approach, students are more involved in the learning process and feel more interested in exploring scientific concepts. This can encourage them to be more active in learning and find out more about the world around them. Scientific learning often involves group work, which helps students develop social and collaborative skills. In a cooperative environment, students learn to communicate, share ideas, and work together to achieve common goals. These skills are essential in everyday life and in the workplace, where collaboration is often necessary to complete projects and challenges.[21]

Scientific learning also focuses on developing students' ability to solve problems and think critically. Through experiments and data analysis, students are taught to identify problems, formulate hypotheses, and find effective solutions. These skills are not only beneficial in academic contexts, but also in everyday life, where the ability to think critically is indispensable. With an increasingly technology-based and scientific-based world, scientific learning prepares students to contribute to modern society. Students who have a strong understanding of scientific principles and technology will

[21] Erna Noviyanti, "SCIENTIFIC AND CONTEXTUAL APPROACH IN SCIENCE LITERACY LEARNING IN ELEMENTARY SCHOOLS," in *Actualization of the 2013 CURRICULUM IN ELEMENTARY SCHOOLS THROUGH THE SCHOOL LITERACY MOVEMENT TO PREPARE A SUPERIOR AND ETHICAL GENERATION, PEKARTI*, 2017, 43–55.

be better prepared to face global challenges, innovate, and participate in scientific developments that can affect daily life.[22]

RESULT AND DISCUSSION

The Definition of Body of Knowledge (BoK) in the Academic World

In the academic world, the Body of Knowledge (BoK) refers to the entire structure of knowledge within a particular discipline. BoK encompasses a set of knowledge, fundamental concepts, principles, methodologies, values, and scopes of study that form the foundation of a field of science or profession. Simply put, BoK can be understood as a map or conceptual framework that explains "what must be known" and "how the approach toward the object of study is conducted" within a scientific domain

The results of the SWOT analysis on the strategies implementation of scientific learning at MTs Nurul Iman Cigalontang Islamic Boarding School can be seen in the following Table 3.

Table 3. Results of SWOT Analysis of Scientific Learning at MTs Nurul Iman

SWOT	Description of Scientific Learning Outcomes
Strengths	1. Hands-on learning approach 2. Scientific learning approach 3. Resources and facilities at the Islamic boarding school
Weaknesses	1. Limitations in the development of critical thinking 2. Lack of learning independence 3. Limited facilities in scientific learning 4. Lack of teacher training and development
Opportunities (Peluang)	1. Intensification of moral and religious values 2. Formation of manners and attitudes through direct briefing 3. Alignment between moral and academic education
Threats (Ancaman)	1. Students' resistance to scientific learning 2. Limited time in the implementation of scientific learning 3. Impact of changes in education policy

[22] Iis Rahmawati, Dedi Kuntadi, and Diah Mulhayatiah, "Implementation of Scientific Learning through Pedagogical Content Knowledge (PCK) Analysis to Improve Students' Understanding of Concepts in Geometric Optical Materials," *Journal of Metaeducation: Scientific Journal of Education* 5, no. 2 (2024): 92–103, https://doi.org/10.37058/metaedukasi.v5i2.8681.

1. ***Strengths***

a. **Hands-on Learning Approach.** The direct learning approach at the Nurul Iman Cigalontang Islamic Boarding School is the main strength in supporting the effectiveness of education. This method allows teachers to provide clear and direct direction, so that students can understand the material better. This is reinforced by the statement of Mrs. Irnawati Fazriyah, S.Pd., who explained that student discipline in the Islamic boarding school environment is an important factor in the success of this approach. According to Bandura (1977), learning through observation and direct interaction between teachers and students can accelerate the understanding and *retention of* information, which is relevant to the characteristics of Islamic boarding school students who have high discipline. Grade VII students also benefit from this approach, where they can directly ask questions to the teacher. This creates closer interactions, ensuring no student is left behind. This approach, in accordance with the theory of constructivism, emphasizes the importance of active participation of students in the learning process. [2324]

b. **Scientific Learning Approach.** The scientific approach at the Nurul Iman Cigalontang Islamic Boarding School serves to develop students' critical and analytical thinking skills. According to Mrs. Irnawati Fazriyah, S.Pd., this approach allows students to not only receive information passively but also participate in the process of observation, experimentation, and analysis. This is in line with the view of Dewey (1938) who emphasized the importance of experience in learning. Grade VIII students revealed that this approach presents a challenge to think independently. In the context of Islamic boarding school, students are taught to develop independence, which is very much in line with the values taught in the environment. [25]

c. **Resources and Facilities in Islamic Boarding Schools.** Although the facilities at the Nurul Iman Cigalontang Islamic Boarding School are limited, the availability of resources such as libraries and simple laboratories plays an important role in supporting the implementation of scientific learning. According to Mrs. Irnawati Fazriyah, S.Pd., this facility, although not as complete as a public school, is enough to help students in undergoing the learning process, especially for scientific experiments. This shows that the existing facilities are used optimally, supporting the theory that a good learning environment can increase student motivation and engagement. Grade IX

[23] Olga Poluektova, Arvid Kappas, and Craig A. Smith, "Using Bandura's Self-Efficacy Theory to Explain Individual Differences in the Appraisal of Problem-Focused Coping Potential," *Emotion Review* 15, no. 4 (2023): 302–12, https://doi.org/10.1177/17540739231164367.

[24] P MacQueeney et al., "Applying Piaget to Classroom Teaching: Stage Development and Social Learning Theory," *The 2022 Whole University Catalogue* (United States of America, 2022).

[25] J Dewey, *How We Think : A Restatement of The Relation of Reflective Thinking to The Educative Process*, new (USA: D.C. Heath and Company, 1998).

students also benefit from the existing facilities, which shows that access to information can improve the quality of learning. The Principal emphasized that the limitation of facilities is not an obstacle, but rather a challenge that encourages the creativity of students and teachers in finding effective learning solutions.

2. *Weaknesses*

a. **Limitations in the Development of Critical Thinking.** One of the main weaknesses in the implementation of scientific learning at the Nurul Iman Islamic Boarding School is the lack of space for students to develop critical thinking skills. Mrs. Irnawati Fazriyah, S.Pd., explained that the learning approach currently applied uses more lecture methods, so that it is less to develop students' critical and analytical thinking skills. As stated by grade VII students, they are used to relying on direct instructions from teachers, so deeper cognitive development, such as *higher-order thinking skills*, is hampered. According to *Bloom's Taxonomy*, the level of critical thinking includes the ability to analyze, evaluate, and create.[26]

b. **Lack of learning independence.** Another weakness is the low independence of students in the learning process. The dominant lecture method in the classroom tends to make students passive. Mrs. Ihda Afriani, S.S., Principal of Nurul Iman Islamic Boarding School, said that the learning method that relies too much on teacher instruction results in students rarely being given the opportunity to be actively involved in the learning process. This can hinder the development of *lifelong learning*, which is one of the main goals of 21st century education. In addition, it also relates to the concept of constructivist learning, where students are expected to build their own knowledge through learning experiences.[27]

c. **Limitations of Facilities in Scientific Learning.** Another significant weakness in the implementation of scientific learning at the Nurul Iman Islamic Boarding School is the lack of supporting facilities, especially in terms of tools and materials for experimental activities. Mrs. Irnawati Fazriyah, S.Pd., explained that this limitation is often the main obstacle in implementing scientific-based learning, which requires active involvement of students in experiments and research. In the interview, grade VIII students also mentioned that they often find it difficult to conduct experiments due to the limited tools available. Meanwhile, in scientific learning, experiments and direct observation are key

[26] Lorin W Anderson and David R Krathwohl, *A Taxonomy For Learning Teaching And Assessing A Revision Of Blooms Taxonomy Of Educational Objectives Abridged Edition*, *Pearson Education*, Revision, vol. 51 (New York: Addison Wisley Longman, Inc, 2021).

[27] Jalal Nouri et al., "Development of Computational Thinking, Digital Competence and 21st Century Skills When Learning Programming in K-9," *Education Inquiry* 11, no. 1 (2019): 1–17, https://doi.org/10.1080/20004508.2019.1627844.

components that allow students to test hypotheses, understand natural phenomena, and develop critical thinking and problem-solving skills.[28]

d. **Lack of Teacher Training and Development.** In addition to the limitations of students, the implementation of scientific learning at the Nurul Iman Islamic Boarding School also faces challenges related to the lack of training and development for teachers. Mrs. Ihda Afriani, S.S., emphasized that not all teachers have a strong background in scientific learning methods. Most of them are still familiar with traditional learning methods and face difficulties in adapting new learning strategies that demand more active student engagement. Meanwhile, teacher professional development is an important factor in the successful implementation of scientific learning.[29]

3. *Opportunities* **(Peluang)**

a. **Intensification of the Inculcation of Moral and Religious Values.** One of the biggest opportunities identified in the implementation of scientific learning at the Nurul Iman Cigalontang Islamic Boarding School is the opportunity to instill moral and religious values in students intensively. Mrs. Irnawati Fazriyah, S.Pd., stated that the learning in the Islamic boarding school environment provides a wide space for teachers to instill religious and moral values in a sustainable manner. This is in line with the view that the education system in Islamic boarding schools does not only focus on the development of intellectual intelligence, but also the formation of strong character based on religious values. The Principal emphasized that learning process provides an opportunity to integrate academic education with moral and religious values holistically. This is because the success of education in Islamic boarding schools is highly dependent on the ability of teachers to shape students' personalities through the intensive cultivation of moral values in daily learning.[30]

b. **Formation of Manners and Attitudes Through Direct Briefing.** The learning in Islamic boarding school also creates a great opportunity to form students' manners and attitudes through direct direction from teachers. One of the IX grade students at the Nurul Iman Islamic Boarding School stated that he felt that direct guidance from teachers was very helpful in developing attitudes and ethics in accordance with Islamic values. Waka Curriculum emphasizes that this approach provides opportunities for teachers to play an active role in shaping students' character. In addition to delivering the subject matter, teachers can easily provide briefings related to manners and attitudes,

[28] Anastasia Mavidou and Domna Kakana, "Teachers' Experiences of a Professional Development Program for Differentiated Instruction," *Creative Education* 10, no. 03 (2019): 555–69, https://doi.org/10.4236/ce.2019.103040.

[29] MacQueeney et al., "Applying Piaget to Classroom Teaching: Stage Development and Social Learning Theory."

[30] Desty Dwi Rochmania, "Implementation of Character Education Based on Islamic Boarding Schools," *Basicedu* Journal 6, no. 2 (2022): 1687–95, https://doi.org/10.31004/basicedu.v6i2.2293.

especially in terms of Islamic manners which are an integral part of daily life in Islamic boarding schools.[31]

c. **Alignment between Moral and Academic Education.** One of the most prominent aspects of the opportunity in the application of scientific learning in Islamic boarding school is the ability to integrate moral and academic education in harmony. The Principal of Nurul Iman Islamic Boarding School stated that the learning process allows for an ideal balance between intellectual and spiritual education. In this case, teachers have a greater opportunity to take advantage of every moment of learning to convey religious and moral values to students, along with the academic material taught.[32]

4. *Threats* (Ancaman)

a. **Student Resistance to Scientific Learning.** One of the main threats in the implementation of scientific learning at the Nurul Iman Islamic Boarding School is student resistance to this method. This resistance occurs because of the significant difference between scientific learning and traditional methods that have previously been applied in Islamic boarding schools. Traditional methods place more emphasis on receiving information directly without much cognitive involvement from students. Grade VII students expressed their anxiety about this new approach because the scientific method forced them to think independently, which had not yet become a habit. These changes can affect students' motivation to learn. According to the theory of learning motivation, when students feel anxious and unsure of their ability to adapt to new methods, their motivation can decrease.[33]

b. **Time Limitations in the Implementation of Scientific Learning.** Time limitations are also one of the significant threats in the application of scientific learning in the Islamic boarding school environment. Scientific learning takes a longer time because it involves stages of exploration, discussion, and experimentation that require a considerable amount of time allocation. At the Nurul Iman Islamic Boarding School, students' study time is not only used for academic activities, but also for various other religious and extracurricular activities. Waka Curriculum, mentioned that the busy schedule of Islamic boarding school activities, including worship and religious programs, often cuts the time that should be allocated for academic learning. According to

[31] Hardi Tambunan, "The Effectiveness of the Problem Solving Strategy and the Scientific Approach to Students' Mathematical Capabilities in High Order Thinking Skills," *International Electronic Journal of Mathematics Education* 14, no. 2 (February 17, 2019), https://doi.org/10.29333/iejme/5715.

[32] Wiwik Indriani and Firdian Firdian, "Challenges of Islamic Education in the Millennial Era," *Anwarul* 1, no. 1 (2021): 89–101, https://doi.org/10.58578/anwarul.v1i1.37.

[33] George Martin Jacobs, Willy Ardian Renandya, and Michael Power, "Simple, Powerful Strategies for Student Centered Learning," no. c (2016): 11–19, https://doi.org/10.1007/978-3-319-25712-9.

previous research, insufficient time can be a major obstacle to the effective application of scientific learning.[34]

c. **Impact of Changes in Education Policy.** Another threat faced in the implementation of scientific learning at the Nurul Iman Islamic Boarding School is the impact of changes in national education policies. Curriculum changes that often occur in Indonesia provide its own challenges for schools in adjusting their learning methods. Mrs. Irnawati Fazriyah, S.Pd., said that the curriculum policy that often changes makes the application of scientific methods unstable. Mrs. Ihda Afriani, S.S., also revealed that inconsistent policy changes are a big threat to the stability of educational programs in Islamic boarding schools. Policy changes that are too frequent can disrupt the teaching and learning process, because teachers and students need time to adjust to these changes.[35]

CONCLUSION

Based on the results of the research and discussion above, it can be concluded that through SWOT analysis, scientific learning at MTs Nurul Iman, Nurul Iman Cigalontang Islamic Boarding School, can be further maximized both through the application of learning models, learning facilities, and the abilities of teachers and students by looking at the existing strengths, weaknesses, opportunities and threats. In terms of strengths, it can be through direct learning approaches, scientific approaches, and the use of existing resources and facilities. In terms of weaknesses, there are limitations in the development of critical thinking, lack of learning independence, and limited facilities for scientific learning. In terms of opportunities, it can be maximized through intensive cultivation of moral and religious values, guiding students' manners and attitudes, and creating a balance between moral and academic education. Meanwhile, in terms of threats, there is student resistance to scientific learning methods, limited learning time, and changes in education policies.

Based on these findings, there are several suggestions that can be made. First, educational institutions, especially in Islamic boarding school-based schools, are expected to increase resource support and training to teachers to optimize scientific learning in order to maximize the success of this learning method. Second, for parents of students, it is hoped that they will play a more active role in supporting the implementation of scientific learning in Islamic boarding schools in order to create a conducive learning environment, so that students can more easily develop critical and scientific thinking skills. As for further research, it is highly recommended to expand

[34] Noviyanti, "SCIENTIFIC AND CONTEXTUAL APPROACHES IN SCIENCE LITERACY LEARNING IN ELEMENTARY SCHOOLS."

[35] Anis Aprianti and Siti Tiara Maulia, "Education Policy: The Impact of Educational Curriculum Change Policy for Teachers and Students," *English Journal of Education and Literature* 3, no. 1 (2023): 181–90, https://doi.org/10.55606/jupensi.v3i1.1507.

the scope of research by involving more Islamic boarding schools from various regions to enrich SWOT analysis regarding scientific learning. This is essential to obtain a more comprehensive picture and solutions that can be applied in the different educational contexts of Islamic boarding schools.

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