Chatgpt utilization for efficient test question design: A case study at smk hisba buana semarang

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ABSTRACT

The development of artificial intelligence (AI) such as ChatGPT, is increasingly being used in the field of education, especially in the preparation of written exam questions. This study focuses on teachers at SMK Hisba Buana Semarang in utilizing ChatGPT to create written exam questions, with the aim of examining the benefits obtained, obstacles faced, and solutions that can be applied. This study was conducted using qualitative methods through interviews, observations, and document analysis, which were then processed descriptively. The results of this study are (1) Utilization of ChatGPT for teachers at SMK Hisba Buana Semarang has used ChatGPT to assist in the preparation of written test questions. The use of ChatGPT has been proven to be able to produce various types of questions, including multiple choice, essays, which are in accordance with the evaluation needs at the school. Teachers can give orders to ChatGPT to produce questions with different levels of difficulty according to the expected competencies (2) There are advantages, namely time efficiency, question variations, flexibility, increased creativity, accessibility. Some disadvantages are the accuracy of the questions, lack of specific context, no question validation, possibility of bias, technology dependence. There are several obstacles and solutions, namely training for teachers on how to use ChatGPT effectively in compiling questions, Teachers need to provide more specific input so that the questions produced are in accordance with the applicable curriculum, The questions produced need to go through a revision and validation stage before being used in the exam, Teachers must review and edit questions to ensure originality, Schools can provide facilities or alternative devices that allow the use of this technology without obstacles. In conclusion, ChatGPT can be an effective tool in the process of creating written questions, as long as it is used wisely and combined with teacher creativity.

Introduction

Globalization in this modern era has not only impacted the industrial and economic sectors, but has also begun to affect the world of education over time. Technology, which is the main means of disseminating information and communication, has also brought about changes in the education system as a whole. The role of the teacher as the sole source of knowledge is slowly shifting, along with the easier access to information through technology. Students no longer have to rely entirely on teachers to acquire knowledge, as they can easily search for information independently through the internet (Husna Nashihin et al., 2020). Improving the quality of Indonesian education can be done by improving the learning and learning system (Maskur, Muhammad Khoirul Anwar, 2021). The digital age is often associated with the phenomenon of globalization, where connectivity between individuals and countries is increasingly close without being hindered by geographical or time constraints. (Aliwan, 2024).

The majority of Indonesian society, even at the global level, has adopted information technology in various aspects of life. This happens because information technology allows the presentation of information more quickly and efficiently (Hidayati et al., 2020). In Indonesia, conversations about artificial intelligence (AI) are increasingly prevalent among the public. The early history of AI can be traced back to 1950, with Alan Turing as the pioneering figure who developed the concept to measure the ability of machines to mimic human behavior. In 1956, the term AI became popular thanks to John McCarthy's contribution, which marked the beginning of the development of modern artificial intelligence. In the 1960s, AI technology began to develop with Natural Language Processing (NLP), such as chatbots. Then, in the 1980s, AI progressed with increased computing capacity. In the 1990s, AI began to be applied in various systems, while by 2000, data-driven AI was growing rapidly. At its peak, in 2020, AI experienced a significant surge with the arrival of technologies such as ChatGPT, which is able to understand and respond to human language more sophisticatedly (Yudi Herdiana, 2025)

The utilization of artificial intelligence technology continues to grow, including in education. ChatGPT, an AI model developed by OpenAI with Natural Language Processing (NLP) technology, is designed to understand and generate text naturally based on user input. This technology can be utilized to answer questions, provide recommendations, and support various text-based tasks, such as writing, translating languages, and composing exam questions (Tantan Hadian, 2023). Utilization includes the process of mobilizing, organizing, and directing human efforts in using material resources and facilities optimally to achieve predetermined goals (Aliwan, Moh. Fahsin, 2025). In education, ChatGPT acts as a tool for teachers and students to understand material, design evaluation questions, and develop critical thinking skills through AI-based interactions. While it offers efficiency and flexibility, its use still needs to be monitored to ensure the accuracy and relevance of the information generated (Yudi Herdiana, 2025). The use of ChatGPT still requires human verification to ensure the accuracy and relevance of the information generated. Evaluation of learning outcomes determines the emergence of academic and accompanying effects for each learner. If the evaluation of learning outcomes is not professional, then the learning process is less effective and evaluation by teachers can be a formality (Pakaya, 2022)

Advances in artificial intelligence (AI) technology have brought innovations in various sectors, including education. ChatGPT, as an AI model that utilizes Natural Language Processing (NLP), has great potential in supporting teachers in developing questions more efficiently (Tantan Hadian, 2023) With its ability to generate questions based on user input, ChatGPT can be utilized to develop questions with various levels of difficulty and variety of forms. In the world of education, making test questions has a

crucial role in evaluating the learning process. According to Arikunto, a test can be considered a good measuring instrument if it meets a number of criteria, such as validity, reliability, objectivity, practicality, and economic aspects. However, many teachers face obstacles in designing quality questions due to limited time and resources available A test can be considered a good measuring tool if it meets several criteria, such as validity, reliability, objectivity, practicality, and efficiency. However, many teachers experience difficulties in designing quality questions due to limited time and resources available (Utomo, 2019)

Bloom's Taxonomy is a hierarchical structure that classifies thinking skills from low to high levels. This concept was first developed by American educational psychologist, Benjamin S. Bloom, in 1950. He found that most of the learning outcome evaluation questions in schools only focus on memorization, even though memorization is the lowest level of thinking. To improve student competence through more effective learning, Bloom compiled Bloom's Taxonomy, which was later published in 1956 in his book "Taxonomy of Educational Objectives: The Classification of Educational Goals." This taxonomy initially consisted of two main domains, namely the cognitive and affective domains. Then, in 1966, Simpson added the psychomotor domain, thus forming three main domains in learning, namely cognitive, affective, and psychomotor. In the cognitive domain, there are four categories of knowledge, namely factual, conceptual, procedural, and metacognitive knowledge. Meanwhile, in the cognitive process dimension, there are six levels of thinking known as C1 to C6, namely remembering (C1), understanding (C2), applying (C3), analyzing (C4), evaluating (C5), and creating (C6). These six levels are often used as a guideline in designing learning objectives as well as developing more varied evaluation questions according to students' level of thinking (Magdalena et al., 2021).

The word "test" comes from Old French and originally referred to a plate used for sifting precious metals, where the tool helped to obtain valuable metals with high value. Over time, the meaning of test has changed and is now defined as a test or experiment. There are several terms related to tests and need to be explained further, namely test, testing, tester, and testee (Muthoifin et al., 2024). Tests are tools or procedures used in the measurement and assessment process. Testing refers to the implementation of measurement and assessment or when test taking takes place. Tester is an individual who is in charge of carrying out or supervising the test on the respondent. All of these terms have different meanings, but are interrelated in the context of evaluation and measurement (Rapono & Wijaya, 2019).

Evaluating student learning outcomes plays an important role in providing feedback to assess the effectiveness and efficiency of the learning process. Evaluation is an inseparable part of learning because it helps teachers assess student achievement. In carrying out an evaluation, a teacher needs an instrument that can be used to measure the level of student ability. One commonly used instrument is a test, which is a series of questions that must be answered by learners to measure their understanding and competence in a learning material (Andri Valen, 2020). Learning outcome tests can be classified into three types based on the form of implementation, namely oral tests, written tests, and action tests. Written tests emphasize the use of paper and pencil as the main instrument, where learners work on questions or answer exams in writing, either by handwriting or using a computer. Oral tests are conducted through direct conversations or interviews between teachers and students to assess their understanding verbally. Meanwhile, an action test refers to the evaluation of a person's skills or abilities in performing a particular task or unit of work, where the main aspect assessed is the direct execution of the action (Rapono & Wijaya, 2019). A competent teacher can conduct assessments using both test and non-test methods. Test-based assessments include oral and

written tests, such as descriptions, multiple choice, short answer, fill-in, match, and true-false questions. In addition, there are also action tests which include performance, assignments (projects), and work (products). Meanwhile, non-test assessment includes aspects such as attitude, interest, motivation, self-assessment, portfolio, and life skills. Action tests and non-test assessments are generally carried out through observation methods (Khaerudin, 2017)

A teacher as an educator must have the ability to assess student learning outcomes. One assessment method that is often used is a written test, which is generally in the form of multiple choice and description. In its implementation, the written test is carried out by answering exam questions in writing, either using handwriting or via computer (Ardellea et al., 2022). One form of test instrument that is widely used is multiple choice questions. Although in multiple choice tests there is a possibility of participants guessing the correct answer, this form of test has several advantages. First, it is suitable for exams with a large number of participants or mass. Second, the assessment process is easier, faster, and more objective. Third, this test is able to measure various cognitive levels and cover a wider scope of material (Achmad Syahlani, 2021). According to Rosyidi, the description test consists of two types, namely 1) limited (structured) description test. 2) Free description test. A limited description test, also known as a structured description test or objective description test, is a type of test in which the answers have been limited or directed, both in terms of material and the form of the answer. Because of its more directed nature, scoring on limited description tests tends to be more consistent and objective (Putri et al., 2022). The form of tests that are often used in assessing learning outcomes consists of objective tests and non-objective tests. Objective tests are generally related to multiple choice items, while non-objective tests (essay tests) are in the form of answers that are arranged more openly. Scoring on objective tests is carried out with an objective scoring system, while on non-objective tests, scoring tends to be influenced by the subjectivity of the assessor (Khaerudin, 2017)

According to Anderson & Krathwohl, guidelines in the preparation of written tests include several important aspects. First, the questions should be in line with the learning objectives and cover a range of cognitive levels, from knowledge to analysis and evaluation. Second, the use of language in the questions must be clear, unambiguous, and adapted to the ability level of the test takers. Third, avoid the use of negative clues such as "not" or "except", as they can confuse the participants (Hasbi, 2024). The steps in written knowledge assessment include: (1) setting test objectives, (2) analyzing material or competencies, (3) making question grids, (4) writing questions, (5) reproducing tests, (6) conducting test trials, (7) analyzing test results, (8) detailing questions, and (9) assembling test questions (Nurul Waizah, 2021)

According to Muttaqin's research in his journal, the current digital era is characterized by rapid technological development to support various human activities, including in the field of education. One of the emerging technological innovations is Artificial Intelligence (AI). AI is a sophisticated system designed to mimic human intelligence and is integrated into certain devices so that it functions as an artificial intelligence tool. In the world of education, AI can provide great benefits, especially in finding information quickly and accurately, which can be accessed anytime and anywhere (Nashihin et al., 2025). In addition, AI not only plays a role in data retrieval, but is also capable of analyzing complex information, something that is often difficult for humans to do. This technology can be used individually or in groups, depending on the needs of the users. Therefore, the application of AI in education can improve the effectiveness and efficiency of the learning process (Mutaqin, 2023). There has been a lot of research on the application of AI in education, especially in the fields of adaptive learning and assessment

automation. However, studies that specifically discuss the utilization of ChatGPT in the preparation of test questions by teachers are still limited. Most of the previous research focuses more on the development of educational chatbots or the application of AI in interactive learning while the practical aspects of its use in assisting teachers in preparing questions have not been explored in depth. A chatbot is an artificial intelligence (AI)-based computer program designed to mimic human conversation and provide appropriate responses and answers to user questions. As a tool for interactive and personalized learning, chatbots are often used by students to solve problems due to their convenience compared to other communication methods lain (Aldwinarta et al., 2024). This research seeks to fill the gap by examining how ChatGPT can be optimized in the process of making quality test questions in a vocational high school environment

The uniqueness of this research lies in its approach that focuses on the implementation of ChatGPT in test item generation at the vocational high school (SMK) level, which has different evaluation needs compared to other education levels. In addition, this research not only examines the effectiveness of ChatGPT in item generation, but also explores how teachers can adapt and validate the results provided by AI to suit curriculum needs and learner characteristics. Thus, this research provides new insights into the synergy between AI and the role of teachers in improving the quality of learning evaluation. This research aims to analyze how the utilization of ChatGPT can help teachers in developing quality test questions at SMK Hisba Buana Semarang.

Method

This research uses a qualitative approach with a case study method to deeply understand the utilization of ChatGPT in improving teacher competence in preparing written test questions at SMK Hisba Buana Semarang. The research subjects are subject teachers who have utilized ChatGPT as a tool in the question making process. Data in this study were collected through various techniques, including in-depth interviews (Syaiful Anam, 2023) to explore teachers' experiences, direct observation of the process of using ChatGPT, documentation in the form of collecting sample questions before and after using ChatGPT, and focus group discussions (FGDs) to explore the benefits and challenges faced by teachers in its use. In analyzing the data, this study applied several stages, namely data reduction by filtering and compiling relevant information, categorization by grouping data based on the main themes that emerged, and interpretation to gain an in-depth understanding of how ChatGPT contributes to improving teacher competence in preparing written test questions. To ensure data validity and credibility, this study used source triangulation by comparing information from various data collection techniques, member checking by confirming the results of the analysis with participants.

Result and Discussion

1. Utilization of ChatGPT for Teachers to Improve Competence in Test Question Preparation

Based on interviews and observations, teachers at SMK Hisba Buana Semarang have used ChatGPT to assist in the preparation of test questions. ChatGPT is proven to be able to generate various types of questions, including multiple choice, essays, and case studies, that suit the evaluation needs at the school. Teachers can give commands to ChatGPT to generate questions with different levels of difficulty according to the expected competencies. In addition, ChatGPT also allows teachers to get inspiration in designing questions that measure specific competencies, such as problem solving, critical analysis, and real-life application of concepts. This provides flexibility for teachers in developing

questions that are not only oriented towards memorization but also on students' deep understanding of learning materials.

2. Advantages, Disadvantages and Solutions to the Obstacles of Using ChatGPT in Compiling Written Test Questions

Some of the advantages, disadvantages, obstacles and solutions found in using ChatGPT are: 1) Time Efficiency ChatGPT can generate various types of questions quickly, saving teachers time in test preparation. 2) Variety of Questions ChatGPT is able to generate questions in various formats, such as multiple choice, essay, or short fill-in-the-blank, which helps in the preparation of varied questions. 3) Flexibility Teachers can adjust the difficulty level of questions according to the needs of the learners. 4) Enhanced Creativity ChatGPT can provide inspiration for teachers in developing more innovative and interesting questions. 5) Accessibility is that it can be used anytime and anywhere without the need for additional software.

Some of the shortcomings found in the use of ChatGPT are as follows: 1) The accuracy of the questions, namely sometimes ChatGPT produces questions that are less relevant or too general so that they require further revision by the teacher. 2) Lack of Specific Context i.e. ChatGPT may not understand the context of the local curriculum or the specific needs of the students. 3) No Question Validation i.e. the generated questions need to be double-checked as ChatGPT does not have an academic validation mechanism. 4) Possible Bias i.e. Some questions generated may contain unintentional bias, depending on the data used in the model. 5) Technology Dependency i.e. Teachers who are not familiar with technology may have difficulty in its use.

Several challenges and solutions have been identified in the use of ChatGPT. One challenge is the difficulty in understanding the technology, which can be addressed by providing training for teachers on how to use ChatGPT effectively in question preparation. Another challenge is the limitation in aligning the generated questions with the curriculum. To overcome this, teachers need to provide more specific input to ensure that the questions meet the applicable curriculum standards (Nikita Nur Zulaecha, Hafidz, Biela Nanda Oktivibi Pertiwi, 2023). Additionally, the quality of the generated questions must be carefully reviewed. A solution to this issue is to conduct a revision and validation process before using the questions in exams. There is also the potential for plagiarism or question repetition, which can be mitigated by having teachers review and edit the questions to ensure originality and avoid unnecessary duplication. Lastly, limited internet access can pose a problem, and schools can address this by providing the necessary facilities or alternative devices to ensure smooth access to this technology.

Interviews with several teachers at SMK Hisba Buana Semarang showed that the use of ChatGPT has had a positive impact on teacher work efficiency. One of the Mathematics teachers stated that with the help of ChatGPT, he can quickly get a variety of questions that match the desired difficulty level. The Indonesian subject teacher also revealed that ChatGPT helped him in designing literacy-based questions that were more contextual and challenging for students. The Computer and Network Engineering subject teacher at SMK Hisba Buana Semarang also stated that the use of ChatGPT has helped him in developing case study-based questions that are more contextual to current technological developments. The Islamic Religious Education subject teacher stated that ChatGPT made it easier to develop UHT, UTS, PAS and School exam questions. He added that with the help of this AI, teachers can adjust the level of difficulty of questions according to the abilities of students in their class, so that the evaluation process becomes more effective and accurate. In addition, the TKR subject teacher also revealed that ChatGPT helps in developing more varied questions, including questions based on electricity and car engines.

With the ChatGPT feature that can generate questions in various formats, teachers find it more helpful in improving the quality of learning evaluation.

In this case study, it was also found that ChatGPT makes it easy to create questions that can be adapted to various learning methods, such as project-based learning and problem-based learning. One teacher at SMK Hisba Buana Semarang explained that he uses ChatGPT to generate questions related to real problems in the industry, so that students can more easily understand the application of the material they learn at school. In addition, some teachers also utilize ChatGPT to develop questions in the form of interactive quizzes and digital-based competency tests. Mechanical Engineering teachers, for example, use ChatGPT to generate more complex question scenarios with answer choices that demand in-depth analysis from students. This helped to improve their understanding of concepts and strengthen their critical thinking skills. However, some teachers also stated that they still need to re-verify the generated questions to ensure that there are no conceptual errors or inappropriate sentence structures. They also emphasized the importance of maintaining creativity in developing questions so as not to rely entirely on technology.

Teachers at SMK Hisba Buana Semarang also realize that the use of ChatGPT must be accompanied by good digital literacy in order to optimize its use in making questions. Therefore, they proposed training and workshops related to the use of ChatGPT. With this case study, it can be seen that ChatGPT has great potential in assisting teachers in preparing test questions, both in terms of time effectiveness, variety of questions, and improving the quality of learning evaluation. Nevertheless, teachers still need to adapt and verify the questions generated to ensure their suitability for the curriculum and students' needs.

Based on interviews and observations, teachers at SMK Hisba Buana Semarang have used ChatGPT to assist in the preparation of test questions. ChatGPT is proven to be able to generate various types of questions, including multiple choice, essays, and case studies, that suit the evaluation needs at the school. Teachers can give commands to ChatGPT to generate questions with different levels of difficulty according to the expected competencies. In addition, ChatGPT also allows teachers to get inspiration in designing questions that measure specific competencies, such as problem solving, critical analysis, and real-life application of concepts. This provides flexibility for teachers in developing questions that are not only oriented towards memorization but also on students' deep understanding of learning materials.

The utilization of ChatGPT also helps in developing questions that are oriented towards 21st century skills, including critical thinking, creativity, communication, and collaboration. Teachers can use this technology to create questions that require students to think more deeply and present answers with broader reasoning. In addition, ChatGPT also has a feature to generate questions based on various cognitive levels in accordance with Bloom's Taxonomy. Teachers can direct ChatGPT to compose questions with the categories of remembering, understanding, applying, analyzing, evaluating, and creating. With this feature, teachers can more easily develop questions that are in accordance with the expected learning outcomes. ChatGPT also allows teachers to automatically adjust the difficulty level of questions based on historical data of student exam results. With customizable algorithms, ChatGPT can help generate questions that match students' level of understanding, making the evaluation more targeted. This is especially helpful in differentiated learning, where each student can receive questions that match their own level of understanding.

Some of the advantages, disadvantages, obstacles and solutions found in using ChatGPT are: 1) Time Efficiency: ChatGPT can generate various types of questions quickly, saving teachers time in test preparation. 2) Variety of Questions: ChatGPT is able to generate questions in various formats, such as multiple choice, essay, or short fill-in-the-

blank, which helps in the preparation of varied questions. 3) Flexibility: Teachers can adjust the difficulty level of questions according to the needs of the learners. 4) Enhanced Creativity: ChatGPT can provide inspiration for teachers in developing more innovative and interesting questions. 5) Accessibility is that it can be used anytime and anywhere without the need for additional software.

Some of the shortcomings found in the use of ChatGPT are as follows: 1) The accuracy of the questions, namely sometimes ChatGPT produces questions that are less relevant or too general so that they require further revision by the teacher. 2) Lack of Specific Context i.e. ChatGPT may not understand the context of the local curriculum or the specific needs of the students. 3) No Question Validation i.e. the generated questions need to be double-checked as ChatGPT does not have an academic validation mechanism. 4) Possible Bias i.e. Some questions generated may contain unintentional bias, depending on the data used in the model. 5) Technology Dependency i.e. Teachers who are not familiar with technology may have difficulty in its use.

Several challenges and solutions have been identified in the use of ChatGPT. One challenge is the difficulty in understanding the technology, which can be addressed by providing training for teachers on how to use ChatGPT effectively in question preparation. Another challenge is the limitation in aligning the generated questions with the curriculum. To overcome this, teachers need to provide more specific input to ensure that the questions meet the applicable curriculum standards. Additionally, the quality of the generated questions must be carefully reviewed. A solution to this issue is to conduct a revision and validation process before using the questions in exams. There is also the potential for plagiarism or question repetition, which can be mitigated by having teachers review and edit the questions to ensure originality and avoid unnecessary duplication. Lastly, limited internet access can pose a problem, and schools can address this by providing the necessary facilities or alternative devices to ensure smooth access to this technology.

The study was conducted on seven subject teachers at SMK Hisba Buana Semarang who used ChatGPT in test question preparation. Data were collected through questionnaires and interviews to identify the benefits, challenges, and effectiveness of its use. The results showed that 85% of teachers felt ChatGPT helped save time in question preparation, making the process more efficient. Additionally, 78% of teachers stated that ChatGPT could generate a greater variety of questions compared to manual methods. However, 65% of teachers believed that the generated questions needed further editing to meet academic standards. Technical challenges were also noted, with 40% of teachers facing difficulties in understanding how to use ChatGPT optimally. Furthermore, 70% of teachers emphasized the need for specific guidelines to ensure that the generated questions align with the applicable curriculum.

Conclusion

The development of information technology and digital media, especially podcasts, plays Utilization of ChatGPT for Teachers at SMK Hisba Buana Semarang has used ChatGPT to assist in compiling test questions. The use of ChatGPT has proven to be able to produce various types of questions, including multiple choice, essays, and case studies, which are in accordance with the evaluation needs of the school. Teachers can give commands to ChatGPT to produce questions with different levels of difficulty according to the expected competencies. In addition, ChatGPT also allows teachers to get inspiration in designing questions that measure certain competencies, such as problem solving, critical analysis, and application of concepts in real life.

Some of the advantages found in the use of ChatGPT are Time Efficiency, namely ChatGPT can produce various types of questions quickly, saving teachers time in compiling

tests. Question Variation, namely ChatGPT is able to produce questions in various formats, such as multiple choice, essays, or short answers, which helps in compiling varied questions. Flexibility, namely Teachers can adjust the level of difficulty of the questions according to the needs of students. Creativity Enhancement, namely ChatGPT can inspire teachers to create more innovative and interesting questions. Accessibility, namely it can be used anytime and anywhere without the need for additional software. There are several obstacles, namely the limited understanding of teachers regarding technology, limited access to devices and internet networks, and concerns about the accuracy of the questions produced. Therefore, some teachers feel the need to check and adjust the questions created by ChatGPT so that they remain relevant to the curriculum and other learning resources. Although ChatGPT makes it easier to create more varied questions, there are still weaknesses, such as limitations in terms of creativity and the possibility of conceptual errors. The solution to the obstacles is that training is needed for teachers, clear guidelines for use, and supervision in its use so that the questions produced remain of high quality. ChatGPT can be an effective tool in the process of creating written questions, as long as it is used wisely and combined with teacher creativity, and supported by adequate training and infrastructure.

References

Achmad Syahlani, D. S. (2021). Pengembangan Instrumen Hasil Belajar Matematika Siswa (Tes Pilihan Ganda). *Jurnal AKRAB JUARA*, *6*(3). https://doi.org/https://doi.org/10.58487/akrabjuara.v6i3.1523

Aldwinarta, F. H., Nurdiana, R., & Sulistina, O. (2024). Media Pembelajaran Berbasis AI Chatbot pada Materi Termokimia di SMA Apakah Dibutuhkan? *Jurnal Inovasi Pendidikan Kimia*, *18*(1), 1–6. https://doi.org/10.15294/jipk.v18i1.49044

Aliwan, Moh. Fahsin, A. L. Z. (2025). *Pengelolaan sedekah sampah rosok dalam mendukung operasional Musolla al-ikhlas di desa guyangan godong kabupaten grobogan*. *3*, 64–74. https://doi.org/http://dx.doi.org/10.26623/dimastik.v3i1.11636

Aliwan, A. H. (2024). Etika Komunikasi Dakwah Virtual di Era Digital. *Janaloka*, *2*(2), 221–232. https://doi.org/http://dx.doi.org/10.26623/janaloka.v2i2.11347

Andri Valen. (2020). Analisis Pemahaman Guru Dan Kemampuan Menyusun Soal Mid Semester Mata Pelajaran IPS Sekolah Dasar. *JURNAL BASICEDU*, *4*(4), 1084–1096. https://doi.org/https://doi.org/10.31004/basicedu.v4i4.501

Ardellea, F., Hamdu, G., Pendidikan, U., Daerah, I. K., & Dasar, S. (2022). Pentingnya Kemampuan Guru Sekolah Dasar dalam Mengembangkan Soal Tes Literasi dan Numerasi Berbasis Education for Sustainable Development (ESD). *Edu Cendikia: Jurnal Ilmiah Kependidikan*, *2*(2), 220–227. https://doi.org/10.47709/educendikia.v2i2.1587

Hidayati, N., Pungkasanti, P. T., Wakhidah, N., Informasi, J. T., & Semarang, U. (2020). Pemanfaatan Media Sosial Sebagai Digital Marketing Umkm Di Kecamatan Tembalang. *Abdimasku*, *3*(3), 119–124. https://doi.org/DOI: https://doi.org/10.33633/ja.v3i3.129

Husna Nashihin, Rani Efendi, & Suci Salmiyatun. (2020). Pemanfaatan Facebook Sebagai Media Pembelajaran Pendidikan Agama Islam Pada Masa Pandemi Covid-19. *At Turots: Jurnal Pendidikan Islam*, *2*(1), 23–37. https://doi.org/10.51468/jpi.v2i1.24

Khaerudin. (2017). Administrasi, Analisis Butir, dan Kaidah Penulisan Tes. *Jurnal Madaniyah*, *1*(12), 100–108.

Magdalena, I., Maemunah, S., & Maya Astuti, I. (2021). Penggunaan Penilaian Teori Bloom Dalam Pembelajaran Matematika Di Kelas 3 Sd Nurul Iman Ashopi. *Jurnal Pendidikan Dan Ilmu Sosial*, *3*(2), 178–189.

https://doi.org/https://doi.org/10.36088/nusantara.v3i2.1237

Maskur, Muhammad Khoirul Anwar, T. (2021). Implementasi Pembelajaran Blended Learning Di Madrasah Ibtidaiyah Maskur , Muhammad Khoirul Anwar , Trianah Sekolah Tinggi Ilmu Agama Wali Sembilan Semarang , Sekolah Tinggi Ilmu Agama Wali Sembilan Semarang , Sekolah Tinggi Ilmu Agama Wali Sembilan Semar. *Jurnal Magistra*, *12*(2). https://doi.org/10.31942/mgs

Mutaqin, F. M. (2023). Efektif Artificial Intelligence (Ai) Dalam Belajar Dan Mengajar. *Seroja*, *2*.

Muthoifin, Erawati, D., Nashihin, H., Mahmudulhassan, Setiawan, B. A., Rofi, S., & Hafidz. (2024). An Interfaith Perspective on Multicultural Education for Sustainable Development Goals (SDGS). *Journal of Lifestyle and SDGs Review*, *4*(3), e01720. https://doi.org/10.47172/2965-730X.SDGsReview.v4.n03.pe01720

Nashihin, H., Rachman, Y. A., Fitrianto, I., & Suhartono. (2025). Empowering Creativity Of Disabled Students Through Sustainable Agropreneur Education at Ainul Yakin Islamic Boarding School in Yogyakarta to Support the SDGs. *Journal of Lifestyle and SDGs Review*, *5*(2), e02878. https://doi.org/10.47172/2965-730X.SDGsReview.v5.n02.pe02878

Nikita Nur Zulaecha, Hafidz, Biela Nanda Oktivibi Pertiwi, H. N. (2023). Pemanfaatan Media Sosial sebagai Dakwah Digital dalam Penyiaraan Agama Kalangan Kaum Milenial di Instagram (Ustadz Hanan Attaki). *Attractive : Innovative Education Journal*, *4*(1), 1–12.

Nurul Waizah, H. (2021). Penilaian Pengetahuan Tertulis Dalam Kurikulum. *Tafkir: Interdisciplinary Journal of Islamic Education*, *2*(2), 207–228. https://doi.org/DOI: https://doi.org/10.31538/tijie.v2i2.54

Pakaya, A. (2022). Meningkatkan Kemampuan Guru Dalam Menyusun Tes Hasil Belajar Melalui Supervisi Akademik di SDN No. 93 Kota Utara Kota Gorontalo. *Jurnal Pendidikan Masyarakat Dan Pengabdian*, *02*(93), 931–938. https://doi.org/: http://dx.doi.org/10.37905/dikmas.2.3.931-938.2022 ABSTRAK

Putri, H., Susiani, D., Wandani, N. S., & Putri, F. A. (2022). Instrumen Penilaian Hasil Pembelajaran Kognitif pada Tes Uraian dan Tes Objektif. *Jurnal Papeda*, *4*(2), 139–148.

Syaiful Anam, H. N. (2023). *Metode Penelitian (Kualitatif, Kuantitatif, Eksperimen, dan R&D)*. PT GLOBAL EKSEKUTIF TEKNOLOGI. https://books.google.co.id/books?hl=id&lr=&id=w-bFEAAAQBAJ&oi=fnd&pg=PA1&ots=vRP1bKcVRG&sig=dA4E7fb8uf45B7Uv87Jkz tTGviQ&redir_esc=y#v=onepage&q&f=false

Tantan Hadian, S. P. (2023). *Berteman dengan ChatGPT: Sebuah Transformasi dalam Pendidikan* (nana mulyana (ed.); 1st ed., p. 36). Edu Publisher.

Utomo, B. (2019). Analisis Validitas Isi Butir Soal sebagai Salah Satu Upaya Peningkatan Kualitas Pembelajaran di Madrasah Berbasis Nilai-Nilai Islam. *Jurnal Pendidikan Matematika (Kudus)*, *1*(2). https://doi.org/10.21043/jpm.v1i2.4883

Yudi Herdiana, L. J. D. (2025). *ChatGPT MASTERY : Pengenalan dan Penguasaan ChatGPT secara Proporsional* (Efitra (ed.); 1st ed.). PT Sonpedia Publishing Indonesia.