

Smart Learning in Elementary School: Professional Ethics of Teachers in the Era of Artificial Intelligence

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ABSTRACT

Educational advancement is inseparable from the role of teachers as educators who guide and accompany students throughout their growth and development. This study aims to understand teachers' perspectives on the use of Artificial Intelligence (AI) technology in education from the perspective of teacher professional ethics. This study employed a descriptive qualitative method, with data collection conducted through interviews with subjects using several questions. This method was then narrated in sub-discussion descriptions, which were then analyzed in detail. The subjects consisted of five elementary school teachers from various regions who were asked to share their opinions regarding the topics raised in the study. The results showed that teachers were concerned about the excessive use of AI in education, particularly in learning, which would lose the essence of education. Teachers' learning in the classroom is not merely about transferring knowledge. It also teaches values and utilizes knowledge effectively for greater benefit to the surrounding community. AI is today's cutting-edge technology, whose capabilities surpass human intelligence, and should be utilized more wisely by teachers. Conversely, it should not restrict teachers' minds from developing their creativity in planning and implementing teaching. Teacher professional ethics is a principle that must always be upheld by teachers in responding to the dynamics in today's education world.

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1. INTRODUCTION

Educational progress is inseparable from the role of teachers as educators who guide and accompany students throughout their development. A formal environment like school offers a potential place for teachers to develop outstanding personalities in students. Educating is not an easy task; it goes beyond simply developing academic prowess. Role models serve as appropriate examples for teachers to introduce real character values that explicitly demonstrate propriety. Imitation is a fundamental

characteristic of a child on their path to maturity; this stage is crucial for teachers to continuously foster virtuous values.

Law Number 14 of 2005 concerning the duties of teachers and lecturers states that as professional educators, teachers are responsible for educating, teaching, training, and directing. A closer look at this law reveals a more focused mission of character building than academic improvement. Teachers must understand this foundation, as educators must uphold professional principles. This is also stated in the teacher's code of ethics, which serves as a guideline for behavior in accordance with moral and ethical values. These rules outline established or mutually agreed-upon standards, obligations that must be met, and prohibited behavior. (Salsabila et al., 2025).

However, the function of the code of ethics is not only to regulate ethics, with the current rapid development of technology, it will play a role in directing the use of the latest technological trends. (Santoso & Fitriatin, 2024) The impact of technological advancements has brought about major changes in the field of education, creating both opportunities and challenges. (M Choirul Muzaini et al., 2024) The creation of educational technology, the fruit of innovation, will become increasingly varied due to access and facilities that make it easier for teachers and practitioners to apply it. A much-discussed technology trend today is Artificial Intelligence (AI). AI is a tool that attempts to match human cognitive abilities, using big data in search engines as its material. (Patty & Lekatompessy, 2024) The output of AI is a digital learning medium or even a learning tool that can actually be useful in supporting the quality of teaching carried out by teachers. (Maulid et al., 2024). The concrete application of abstract concepts into something tangible in the form of text, images, and videos can be realized through prompts, namely instructions or questions included in the system to produce actions or responses.

The application of AI in the learning system encourages students to be active and forms independence in learning, so that it will make it easier for teachers to guide them because of their good mastery of initial skills. (Hanila & Alghaffaru, 2023). Furthermore, AI can be beneficial for teachers in helping them develop ideas for conceptualizing a learning design. The initial concepts teachers develop can be scanned through an AI chatbot platform, with the output of an effectiveness review of the learning model and its supporting tools.

The freedom of access to AI exploration, such as finding answers and completing assignments, is often seen as a practical solution for teachers and students in completing their work. Consequently, ignoring authentic thinking, laziness, and dependence on AI are the consequences of declining motivation to improve competency as educators. This situation certainly violates the natural principle of "lifelong learning." While artificial intelligence offers convenience in supporting the process of creation and innovation, it is important to note that AI can also lead to ethical violations. (Afandi & Kurnia, 2023). Cognitively, artificial intelligence can even surpass human capabilities, but this technology lacks experience and emotion. This limits its ability to perceive and interpret the value of the problems faced. It is certainly not recommended for teachers to rely on this technology in decision-making. (Rochim, 2024).

Numerous studies have demonstrated the advantages of AI technology in improving the quality of learning in elementary schools, claiming to foster independent learning and realize the principles of a student-centered approach. This represents active learning through digital interaction experiences, exploring knowledge through artificial intelligence. However, the researchers' analysis demonstrates the need for restrictions on teachers' wise use of AI. This rule may not be explicitly stated in the teacher code of ethics, but it is implicit in the code's guidelines, specifically the principle of improving the quality of education. Quality education is achieved through a thorough process, not instant gratification. This research seeks to provide teachers with an understanding of the relevance of the code of ethics governing the use of AI as a supporting technology in the development of teaching materials.

Furthermore, teachers, as educators, should be able to guide students to be more wise in using technology, particularly AI. The advantages of artificial intelligence are permitted for use in the learning process, provided that provisions must be explained to students, relating to the limits and deadlines for AI operations within a single learning period. Teacher guidance is crucial for maintaining the quality of

education, starting with maintaining the quality of students themselves, so they continue to optimize their potential without relying on the capabilities of technology.

The purpose of this study is to understand teachers' perspectives on the use of Artificial Intelligence (AI) technology in education from the perspective of professional ethics. The results are expected to demonstrate that teachers are concerned about the excessive use of AI in education, particularly in learning, which will lose the essence of education.

2. METHODS

This study, using a descriptive qualitative method, aims to analyze elementary school teachers' perceptions regarding their understanding of professional ethical principles in the application of AI technology (principles and rules). This analysis is based on the new era in the development of artificial intelligence technology, which is slowly changing human thinking, including in the field of education. AI makes it easier for teachers to design practical learning models, undeniably assisting teachers, especially in completing administrative tasks. However, teachers must not forget the principle of the code of ethics, namely the development of pedagogical competence. Data regarding teacher perceptions were collected through a systematic interview instrument. Interviews were conducted by presenting several questions in a Google Form link.

Several questions will prompt teachers to elaborate on their opinions on topics related to professional ethics regarding the development of AI. The research focuses on exploring the principles of AI use in teacher learning planning, implementation, and evaluation. It also urges teachers to provide guidance to their students in the wise use of AI.

3. FINDINGS AND DISCUSSION

Obstacles to Implementing the Code of Ethics in the Use of Technology

Based on interviews with several elementary school teachers, they expressed their views on the difficulties of implementing a code of ethics in the use of AI. The teachers stated that AI technology requires data privacy for its effective use. Data privacy is a right for users to access and consent as a prerequisite for operation. Data privacy is a valuable asset that needs to be protected and managed properly because it stores so much important information. Teachers are concerned about the security of data managed by platform providers, which could leak at any time. The data privacy contained within it stores personal information that can be identified through electronic systems. (Purnomo, 2024) Moreover, when AI is used by students, teachers are responsible for the security of their students' data. Teachers' lack of understanding should not lead to unintentional violations of the code of ethics. Such problems will undoubtedly impact teachers' creativity and performance in their duties.

This also refers to the teachers' opinions, which explain the importance of implementing a code of ethics in the development of AI-based learning systems. However, they believe that implementation will face numerous challenges, ranging from conflicts of interest, differences in cultural values, to issues of legal liability. Therefore, collaboration between the government, industry, academia, and the community is needed to create a system that balances innovation with ethical responsibility. The government should establish specific regulations to establish rules regarding the use of AI technology in learning. This could even include introducing education-based AI technology integrated with the GTK space within the PMM Merdeka Mengajar Platform. This solution is worth considering by the government, through encouragement from professional organizations, so that AI can provide greater benefits without worrying about data breaches for teachers and students.

Technological advancements have supported innovation in education, facilitating the development of learning models and media for teachers. Technology plays a crucial role in improving the quality of teaching for teachers, especially with the rise of Artificial Intelligence (AI) among educators. Researchers have observed the use of AI to create learning modules to fulfill administrative tasks. In fact, all components are created by AI without any input from the teacher, a process that can be described as a flash. The perception arises: does this violate the code of ethics? The researcher

questions competence. The content of the resulting modules is actually of good quality, with appropriate materials and design. However, this again comes down to ethical principles, based on values and norms agreed upon within a professional organization. Law No. 14 of 2005 explains that one of the duties of teachers is to develop knowledge, a task that can only be achieved through learning. The simple correlation is that if teachers rely solely on AI to complete their tasks, they will stop learning.

Professional organizations should be wary of the obstacles to teachers' mindsets, which are at risk of becoming stagnant. Ethics, inherent in values, should be able to align with current developments in science and technology. (Pane & Nailatsani, 2022) Every teacher is required to adhere to the code of ethics to demonstrate professionalism in their duties. The influence of technology is unavoidable; shunning all its elements is tantamount to rejecting the advancements of the era. Therefore, teachers must respond wisely, thinking carefully about its use and avoiding ethical violations.

The role of professional ethics in the application of AI

Based on the results of interviews conducted with participants regarding professional ethics, it was revealed that professional ethics guide professional actions to: Protect individual rights, act transparently, responsibly, and minimize the risk of data misuse. Ethics is not only about legal compliance, but also about a moral commitment to serve humanity fairly and responsibly. Professionals in matters of privacy must prioritize informed consent from individuals and strict data security needs to be established. They are also responsible for always respecting individual rights regarding data. Continuous evaluation of privacy risks and continuous professional development are also integral parts of this ethics, ensuring that AI technology is developed and implemented responsibly.

Analysis of the interviews conducted shows that teachers actually need a platform that can provide security in the use of AI. The service is expected to fully guarantee data privacy from various data breach threats. In an effort to increase the digitalization of the education sector, the Ministry of Education and Culture has partnered with Canva. Canva's features actually contain AI, which is useful for realizing ideas in the form of visual design templates for creating PPT materials and flyers. Rather than focusing on its function, this feature clearly does not focus on designing planning or evaluation ideas. Furthermore, this form of collaboration is considered less transparent regarding user data privacy, as Canva's product is not a product of the Ministry of Education and Culture itself. The use of AI in various fields, including education, presents its own challenges to data privacy if not strictly managed. (Hasanah, 2024) The database used to access AI features should be managed securely and independently to avoid concerns about data leaks.

The digitalization era indicates the value of data assets to support innovation and business decision-making strategies. (Arya Satya Pratama et al., 2023) Data breaches occur due to lax management and are commercialized by irresponsible parties for profit. This would undoubtedly be detrimental to platform users. This research seeks to raise awareness of ethical violations in the use of AI. Consequently, teachers and students must be equipped with in-depth insight into this technology. Digital literacy is crucial in the digital age, as well as its application in enhancing learning activities.

Independent learning is the right of every student who desires to improve their academic abilities or acquire new skills. This can be achieved using AI technology, especially since independent learning doesn't need to take place in a school setting. It can occur anywhere and anytime by leveraging the ease of access to AI. The massive exploration of information or the search for solutions to problems relying on AI leads to laziness in thinking. Learning outcomes may be easily achieved, but the learning process is completely lacking. Learning experiences are crucial for students to understand the material and explore its usefulness in life. This process is a long journey, not just an instant solution.

Likewise, for teachers, utilizing the power of AI technology is certainly permissible as long as it doesn't violate ethical principles. For example, relying entirely on AI results in the creation of learning modules, materials, and evaluations is not recommended. Instead, AI is permitted to be used to help create teaching concepts or find examples for inspiration when designing learning models.

The impact of implementing a code of ethics on the development of AI-based learning

Teachers play a crucial role in developing national character, which is currently under scrutiny regarding moral development and improvement. The quality of human resources is not only measured by the development of science and technology in a country, but also by the values held as principles by each individual in every aspect of life. Character is the fundamental nature of an individual that underlies moral behavior and actions, both within and outside of a group. (Dewi et al., 2021). The good or bad character of students is undoubtedly influenced by the education provided by teachers at school and by parents at home. The advent of AI technology should be a catalyst that transforms into a strong desire to act more wisely in facing every challenge. The use of AI technology should be met with a high level of awareness to avoid dependence and indiscriminate use. Moreover, if it can impact the productivity of students and teachers in the educational field, this is certainly a sign of the loss of meaning in learning.

The following is a presentation of teachers' opinions regarding the impact of implementing a code of ethics in the development of AI-based learning. "The application of a code of ethics in educational AI ensures that the learning system is fair, respects privacy, and provides objective assessments. It also improves the quality, trust, and sustainability of AI use in the classroom. Without ethics, AI technology can be a discriminatory, invasive, and detrimental tool for students. However, with ethics, AI can be a powerful, fair, and safe learning companion." "The application of a code of ethics in AI technology ensures that AI-based learning is designed and implemented with a priority on fairness, student data privacy, and objectivity of assessment. This means that the data used must be free from bias to maintain fairness, the system must protect and manage students' personal data securely, and AI assessments must be transparent and accurate to ensure objective results. Thus, the effectiveness of the system increases because users have more trust and feel safe using the technology."

This view reinforces the belief that acting wisely is the primary mission of implementing a code of ethics in the development of AI-based learning. This aligns with the teacher's opinion that the rules for using AI emphasize the principle of fairness, namely the freedom for students to think and discover concepts. Forming an abstract understanding of concepts requires concrete experiences that students have directly experienced, for example, experiencing real-life problems or phenomena in everyday life. (Aura Yolanda et al., 2024).

Independent thinking will surpass AI's capabilities in experiential learning. Artificial intelligence, on the other hand, excels solely in intelligence due to its vast database of knowledge. Similarly, in assessment systems, AI integration contributes to more credible, efficient, and practical assessments. Similarly, the use of Learning Analytics is useful for understanding the diversity of student learning patterns. This system not only displays grades but also provides feedback on students' ongoing learning progress. (Sofa et al., 2025).

Through the data owned by teachers, which can then be analyzed through the system, AI will provide information related to pedagogical insights for teachers regarding the appropriateness of the methods, strategies, approaches and techniques applied by teachers in learning. (Amananti, 2024) Furthermore, AI can predict learning processes that need to be implemented in the future and identify student needs that need to be addressed early.

Based on the teachers' opinions, it was explained that the implementation of the code of ethics aims to improve the quality of AI-based learning. This technology encompasses a broader range of information and reasoning at a level different from human capabilities. These advantages need to be developed within the learning process, not used solely for problem-solving.

The description of the utilization focuses more on the role of search engines, which provide a wealth of information related to the field of study being studied. Furthermore, AI assists in projecting report writing formats and performance sheets for teachers to monitor student competency achievement. AI-based applications also provide engaging learning experiences, enabling students to learn more flexibly and independently. (Pratiwi & Yunus, 2024) This will foster learning habits in students and prevent bad habits in social media exploration. Teachers must explain procedures for

using AI to students, including the benefits and limitations of its use, as well as the negative impacts of relying too heavily on this technology's features to complete assignments. Ethics are always closely linked to procedures, specifically regarding rules that permit and violate them.

Concession rules or procedures for utilizing AI in preparing teaching materials in elementary schools

Artificial intelligence is the development of technology with capabilities equivalent to human intelligence in terms of reasoning, visuals, audio, and audiovisuals. Almost equal to, or even surpassing, this technology in education can support the creation of learning media. (Rachmayanti & Alatas, 2023). AI features offer numerous innovations that incorporate technological elements through the development of instruments, media, and strategies. The benefits are limitless, even aiding in the rapid discovery of answers. This means that AI itself facilitates educators' decision-making when designing learning strategies.

However, in some cases, AI is used to complete tasks instantly. For example, to help produce modules, this is not justified on the grounds of originality or authenticity of an educator's thinking, which is based on each individual situation and student's condition. Furthermore, when developing teaching materials, it is necessary to outline several rules for its use to improve the designed concepts. The following is a review of several teacher interviews related to this issue.

"The use of AI in the preparation of teaching materials in elementary schools must be collaborative, directed, and ethical. With clear procedures, namely teachers remain the main subject of learning, AI becomes an intelligent and critical tool, children continue to learn in a fun, humane atmosphere, and according to their developmental stage". "The procedure for utilizing AI in the preparation of teaching materials in elementary schools (SD) needs to be designed carefully to avoid excessive dependence on technology, minimize information bias, and maintain pedagogical values that are appropriate to the characteristics of elementary school children. "The procedure for utilizing AI in the preparation of teaching materials in elementary schools can be designed so as not to cause technological dependence, information bias, and still maintain a pedagogical touch that is appropriate to the characteristics of elementary school children, namely: 1. Can develop interactive and interesting teaching materials using AI that are appropriate to the characteristics of elementary school children 2. Using AI for student data analysis that is tailored to student needs 3. Using AI to provide feedback to students about their learning progress".

The interview results show that designing learning materials using AI should be guided by several principles: collaborative, purposeful, and ethical. Collaborative learning aims to combine the knowledge and experience of each individual to generate new insights, whether based on specific areas of expertise, disciplines, or specific areas of interest. (Karina et al., 2024). This form of cooperation encourages students to exchange ideas, accept other people's opinions and makes it easier to achieve goals. (Rofiudin et al., 2024) AI may be highly reliable in creating learning design modules in an instant, but it will never be able to directly understand the character and abilities of the students in the classroom. The person who best understands the learning environment is the teacher, so it can be said that the most effective learning modules are those created by the homeroom teacher. Not being created by AI presents its own limitations. AI is still permitted to be used as a supporting tool in realizing good learning materials. Of course, with more judicious use, it doesn't necessarily mean relying entirely on this technology.

Furthermore, regarding the second principle, namely the development of directed learning materials. This term refers to a more systematic series of materials developed based on the Learning Objectives (TP). The first step teachers must take is to review the TP for each subject matter to develop the material according to the competencies and needs of students. Therefore, this can also be considered ethical, meaning, within reasonable limits, not presenting material that is far above the average ability of the students being taught. Furthermore, the material's language structure should not be too difficult, as the language generated by some AI devices can seem rigid and poorly structured. The role of AI in

material development should be intended to finalize the material ideas that teachers have previously developed.

Through ideas teachers gain from observations and experiences, AI will bring brilliant ideas to life with unconventional presentations. Interactive and engaging learning concepts, in line with teachers' expectations, will be successfully realized. Furthermore, regarding teacher empowerment procedures, it is important to carefully design them to avoid creating a dependency on the technology. There are still many negative impacts of excessive AI use, including weakening students' critical thinking and creativity. (Supriyono & Prihandono, 2024) Both of these skills are essential in the learning process, helping to deepen knowledge and create innovation. Teachers must carefully consider the potential impacts of excessive AI use. At the very least, the learning materials they design should not be directly connected to features like AI chatbots. Instead, the learning materials should be presented in concrete media, independent of these technological elements.

Morally and emotionally, the role of teachers is irreplaceable in terms of educating students to understand the social environment and its problems. (Ulimaz et al., 2024). While AI is merely a supporting tool to strengthen students' understanding through cognitive abilities, it would be better if both were fully integrated into education, as this would undoubtedly provide extraordinary benefits. Meanwhile, the development of teaching materials using AI must be based on pedagogical values oriented towards early childhood education, specifically tailored to the development of elementary school students. The resulting materials or media should be contextual, closely related to phenomena in students' daily lives. Contextual learning allows students to connect subject matter to real-life situations or conditions in their environment. (Mahbubi & Sa'diyah, 2024). In the future, these learning tools will be able to be used sustainably and more adaptively.

4. CONCLUSION

Artificial Intelligence Artificial intelligence (AI) is currently having a profound impact on progress in education. Knowledge is so easily accessible with reasoning as logical as human thought. This technology can even surpass human cognitive capabilities. We will never know what output AI will produce in the future; it may not be limited to text. AI will create complete, concrete objects according to our needs. A glimpse into the advancement of AI technology shows that there are certainly no regulations prohibiting teachers from utilizing it. However, based on an educator's conscience, without prioritizing ethical principles, utilizing AI without weighing the pros and cons will have serious consequences for both teachers and students. First, in teaching students, we need to understand their basic needs related to achievement competencies. Second, instilling character values in students during the learning process can only be taught through teacher role models, both verbally and through direct modeling. AI is merely a technological device with human-level intelligence, but it cannot detect or perceive a person's feelings. This technology lacks the intuition to understand a diverse student body.

A limitation of this study is that the subjects' prior knowledge of AI was still very limited. Therefore, the researcher needed to explain the topic of artificial intelligence. Although teachers have encountered AI technology, they still don't fully understand the concept. It is hoped that through the ideas presented by the researchers, based on existing data and facts, regulations will be created in the future to govern the use of AI in education, including planning, implementation, and evaluation. The principles of professional ethics will always be upheld by teachers as educators.

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