Islamic Journal of Integrated Science Education (IJISE), Vol. 3 No. 2, July 2024, pp. 93-103
DOI: https://doi.org/10.30762/ijise.v3i2.3384

Islamic Journal of Integrated Science Education (IJISE)

Program Studi Tadris IPA
Universitas Islam Negeri (UIN) Syekh Wasil Kediri
e-ISSN : 2986-0865
https://jurnalfaktarbiyah.iainkediri.ac.id/index.php/ijise

THE ROLE OF SCIENCE TEACHERS IN INSPIRING THE YOUNGER GENERATION: IMPROVING THE QUALITY AND COMPETENCE OF SCIENCE TEACHERS

Kamilia Nisa'i[1*], Fareza Chandri[2], Fransiska Faizah[3], Siti Zaenaf[4], Fanesa Oktavianes Aulia[5], Nurul Hidayah[6]

[1]Institut Agama Islam Negeri Kediri, Indonesia
[2]Institut Agama Islam Negeri Kediri, Indonesia
[3]Institut Agama Islam Negeri Kediri, Indonesia
[4]Institut Agama Islam Negeri Kediri, Indonesia
[5]Institut Agama Islam Negeri Kediri, Indonesia
[6]Institut Agama Islam Negeri Kediri, Indonesia

***Correspondence: E-mail:** kamilianisai621@gmail.com

Abstract: Science teachers are not only responsible for teaching the material, but also inspiring students' curiosity, critical thinking, and character. This research uses the literature study method to gather information from relevant academic sources, including peer-reviewed journals, academic books, and trusted publications. This research discusses the important role of science teachers in inspiring the younger generation and improving their quality and competence. Teachers' competence in planning, implementing and evaluating learning greatly affects student success. Competent teachers are able to create an effective learning environment, manage the classroom well and use various resources and technology to enrich students' learning experience. Competent and inspiring science teachers can help students reach their full potential through quality education. This can be achieved through continuous training, adoption of innovative teaching methods and dedication to educating. Thus, science teachers play an important role in preparing students to face future challenges and become agents of change in society.

Keywords: Teacher, Science, Competence, Communication

Article History:
Received: 27 June 2024; Revised: 28 July 2024; Accepted: 18 August 2024; Published: 20 August 2024

Citation (APA Style):
Kamilia. (2024). The Role of Science Teachers in Inspiring The Younger Generation: Improving The Quality And Competence Of Science Teachers. *Islamic Journal of Integrated Science Education (IJISE), 3*(2). https://doi.org/10.30762/ijise.v3i2.3384

Copyright : © 2024 by the authors. This is an open access publication under the terms and conditions of the Creative Commons Attribution - ShareAlike 4.0 International License (CC BY SA) (https://creativecommons.org/licenses/by-sa/4.0/).

INTRODUCTION

Education has now become a basic need for every individual, so the role of education is very important in developing the potential of quality human resources. In addition, education now plays a key role in the development of national civilization and is the main tool for preserving the values of community life (Andi Sadriani et al., 2023). Education is one of the key factors in determining the success of a nation. Through education, a nation can have a superior generation in accordance with the demands of the times. The learning process that occurs in the classroom should be carried out effectively and according to the needs of students, besides that it is also necessary to develop teacher competence as one of the important actors in the classroom learning process (Darmadi, 2015). However, the lack of attention of educators is closely related to the low ability of educators to plan, implement, and evaluate, especially compiling learning outcome instruments that have the potential to develop students' 21st century skills as part of learning outcomes (Jufri dkk., 2018). In developing human resources and advancing the nation is the role of education. Not only that, education is also a means to prepare students' future as citizens. Idzhar (2016) explains that education is a major factor in developing competition in the fields of culture, law, politics, and economy, culture in every country. This means that education has an impact on all aspects of life, indicating that education is very important for the life of every nation (Elitasari, 2022).

A quality education must actively involve students in the learning process in order to form the values needed to live their lives. Quality education is also influenced by the teacher. Therefore, teachers at all levels of education should be able to design and implement science learning by prioritizing the development of thinking skills, the ability to work together, and student literacy in a positive way (Sibela dkk., 2024). The development of the quality of thinking skills can be done through the design and implementation of learning models that involve students actively in a series of learning processes (Jufri dkk., 2018). Muslich (2014) argues that to achieve competency standards, planning and Concrete efforts are needed in the form of learning activities for students. Competency-based learning with a contextual approach is the main choice in the Education Unit Level Curriculum for 2 reasons. First, the presence of the Education Unit Level Curriculum is motivated by the spirit of competency to be achieved through learning. Second, the competency achieved will be faster if the learning is supported by the context or reality experienced by students (Wulandari & Rochana, 2022) Teachers have an important role in determining the quality of student learning, including in increasing student activeness, the ability to motivate them to lears, and the ability to provide facilities that support the success of the learning process. The teacher's ability to plan and implement learning affects

student learning outcomes (Illahi, 2020). Professional teachers are teachers who are able to educate their students to become competitive and good moral individuals 10 In the implementation of education, which includes planning, implementing and evaluating learning activities, teacher performance must be integrated in four competencies, pedagogic, social, personality and professional. These four competencies are mandatory standards that every teacher must have to teach the subject (Zukmadini et al., 2021).

Their full potential is invaluable to the future of the student, as well as society as a whole. Identifying, developing and guiding this potential to the pinnacle of achievement is a very important task for teachers (Jumransyah dkk., 2014). Theachers serve as pillars of knowledge in fields like science and physics, guiding students through the complexities of the material. They foster curiosity, teach how to conduct research, and encourage critical thinking, Teacher's abo build student character by teaching values such as perseverance, discipline and teamwork Students' best can be achieved through the development of life skills and academic success, which prepares them for future challenges. Therefore, the role of teachers is very important in understanding and maximizing students' potential, especially in science subjects (Afini Alhamdani Essa & Raudatul Ardauyah, 2023)

Some almost similar research entitled "Improving the Competence of Science Teachers in Mataram City in Facilitating Mastery of 21st Century Skills for Junior High School Students" where science teachers in Mataram city are still unable to integrate skill elements in the learning process. After participating in this service activity, there was a development in the ability and motivation of teachers to explore the importance of skills. The purpose of this study is to find out how a teacher can provide inspiration and improve the quality and competence of a teacher to create quality education.

METHOD

This research uses the literature study method to collect, analyze and synthesize information from various relevant academic sources. This method auns to gain a comprehensive understanding of teacher competence in science learning and its influence on student success. In the first step, the study focused on selecting sources relevant to the research topic. These sources specifically address teacher competence, teaching strategies, student motivation and the application of science in everyday life. The sources selected should meet credibility criteria, such as peer-reviewed joynals, academic books, conference articles and publications from other reliable sources.

FINDING AND DISCUSSION

Teachers have the responsibility of guiding the student learning process. As a very important component, teachers must have abilities that are in accordance with the functions and objectives of learning. This is based on several assumptions. First, a teacher's success depends on his or her personality. Second, teacher success depends on mastery of methods. Third, teacher success depends on the frequency and intensity of interaction between teachers and students. Fourth, the teacher's appearance, whatever the basis and reason, is the most important as a sign of having insight, mastery of material, and mastery of learning strategies (Fatchurrohman, 2019).

Teacher professionalism competence refers to the ability and authority of teachers in carrying out their teaching profession. This means that teachers must be proficient in carrying out their duties. Therefore, teachers must be able to demonstrate higher abilities compared to their students, both in mastery of expertise and in the learning methods and strategies chosen. In the learning process at school, the selection of teacher resources should be based on their competence Teacher competence in the teaching and learning process is a crucial factor in determining the success of teaching. According tar Hamalik (2002), competent teachers have the ability to create an effective and enjoyable learning environment and are able to manage their classes well, so that the learning process of students can reach an optional level. Competent teachers not only understand the material being taught but also master teaching methods and strategies that can motivate and actively involve students in learning (Sihombing dkk., 2024). They can create a classroom atmosphere conducive to learning, utilize various resources and technology to enrich students' learning experience, and assess and evaluate students' progress on an ongoing basis Thus, competent teachers are able to support students' academic and personal development, help them reach their full potential, and prepare them for future challenges. The combination of knowledge, skills and positive attitudes possessed by competent teachers is highly influential in creating a meaningful and successful learning process (Widyastuti & Widiyaningrum, 2017).

An effective teaching strategy is essential to increase motivation cannot be abandoned in the context of science learning. A learning environment that stimulates students' curiosity and integrates it into everyday life is the ability of a teacher to choose methods and approaches that suit the needs and characteristics of students Highly motivated students also play an important role in successful learning. Intrinsically motivated students tend to be more diligent, creative and active in learning activities. They also tend to be more interested in understanding science concepts and applying them to everyday life. Science learning will become more significant

and have a positive impact on the application of science in everyday life if combined with effective teaching approaches and high student motivation (Savitri dkk., 2022).

The application of science in everyday life provides many benefits for a student. First, students gain an understanding of natural phenomena and modern technology, which allows them to make more informed decisions in various contexts, such as protecting the environment or understanding the technology used in a lab. Students also learn scientific attitudes such as curiosity, critical thinking, and creativity. They also learn to use a structured approach to assess evidence and solve problems, which are very important skills in this increasingly complex and fast-changing world. Furthermore, students can produce tangible outcomes from their learning This can be in the form of technology projects, scientific experiments or environmental problem solving. By applying science to everyday life, students do not just become passive consumers of technology and knowledge, but also play an active role in designing their own future. Therefore, teachers play a role in conveying knowledge, shaping attitudes, and facilitating tangible results from science learning. It is very important to prepare students to face an increasingly sophisticated and complex world (Afini Alhamdani Essa & Raudatul Ardauyah, 2023).

The role of government and educational institutions is crucial in supporting the development of science teacher quality. Qualified science teachers are an important foundation in the formation of a young generation that is able to compete in the era of technology and information. The government has the responsibility to formulate policies that support the improvement of education quality, provide adequate facilities and ensure continuous training programs for teachers (Azhara & Kartini, 2022). Meanwhile, educational institutions play a role in providing relevant education and training programs and encouraging innovation in teaching methods. This synergy between the government and educational institutions is expected to create a conducive environment for the professional development of science teachers, so as to produce graduates who are competent and ready to face future challenges (Khair, 2021). School principals have an important role in managing and improving the quality of teachers, which has a direct effect on the quality of student education. Effective leadership from a principal can encourage teachers' professional development. The identification of teacher competence is carried out to determine the extent of the teacher's abilities and weaknesses in science subjects, mastery of the science curriculum is one of the main aspects studied in the implementation of effective teaching and learning activities. Mastery of the curriculum is a must for teachers before carrying out teaching and learning activities, the use of methods and evaluation techniques is a matter of concern (Maolana dkk., 2023).

Efforts to improve teacher competence can implement Classroom Action Research (PTK) or classroom action research. Classroom Action Research is a professional development model where teachers study how students learn in relation to how teachers teach, so that teachers can improve their shortcomings in teaching to have an impact on improving the learning process of students (Fitria et al., 2019). PTK can be utilized to improve teachers' ability to self-reflect, improve school progress, and foster a professional culture among educators. Thus, Classroom Action Research is a teacher professional development where a teacher can conduct Classroom Action Research which is called a scientific activity of a teacher developing innovations in learning such as using methods, media strategies in order to improve his professional competence (Sri Astutik et al., 2021). In addition, Classroom Action Research can improve teacher performance so that it becomes professional. Teachers are no longer practitioners, who are only satisfied with what is done without improvement and innovation, but also as researchers in their fields and also the implementation of PTK is based on actual and factual problems that develop in their classrooms and do not interfere with the main duties of a teacher because he does not need to leave his class because PTK is a research activity that is integrated with the implementation of the learning process (Annury, 2019).

In addition, efforts can be made to implement the Teacher Working Group (KKG) which is a forum (container) for communication as a place for teachers to hold discussions, questions and answers and efforts to foster and develop their professionalism with the guidance of guide teachers, school principals, supervisors, and other education coaches (Palettei & Sulfemi, 2019). The purpose is to broaden teachers' insights and knowledge in various matters, provide opportunities for members of the working group or work deliberation to share experiences and provide mutual assistance and feedback, improve teachers' knowledge and skills, empower and assist working group members in carrying out learning tasks at school (Sukirman, 2020).

Strategies such as effective communication to understand teachers' needs, professional development programs to improve teaching skills, constructive feedback, recognition of achievements, and mentorship programs between teachers are helpful in providing support and motivation (Taib, 2021). Involving teachers in the decision-making process, facilitating collaboration, and a supportive supervisory approach also contribute to improving teaching quality. Through the implementation of these strategies, principals can become inspirational leaders and have a positive impact on teacher quality and student learning experiences (Nurhuda et al., 2020). The role of teachers in the education category can be seen in **Table 1**.

DOI: https://doi.org/10.30762/ijise.v3i2.3384

Table 1. The role of teachers in the education category

Category	Benefits
Learning	More effective and interesting learning. Use of innovative learning methods. Student-centered learning.
Student Achievement	Improved student academic results. Increased student motivation and participation. Development of non-academic skills.
Teacher Professionalism	Career development and promotion. High job satisfaction. Adaptability to change.
Impact on School	A better and more desirable image of the school. Better curriculum development. More collaboration with parents.
Social and Economic	Increased literacy and education of the community. Contribution to national development. Reduction of education gap.
Social Welfare	Reduction of school dropout rates. Increase awareness of social and moral values. Creating a positive school environment.

Inspiring and motivating students to learn science is a key element to creating a deep and meaningful educational experience. With the right approach, teachers can arouse students' curiosity and interest in the world of science, so that they are encouraged to explore more deeply and develop a better understanding of scientific concepts. Support from the school and family environment also plays an important role in building students' motivation to learn science enthusiastically. In increasing the inspiration and motivation of students in learning science, there are many methods and learning models that exist so that they can increase the inspiration and motivation of students in learning science, one of which is according to (Budiarto, 2015). In the context of science learning in elementary schools, the teaching methods generally used by teachers are still conventional, which do not involve experimental activities or direct observation. This approach often makes the learning process less effective and uninteresting for students, which has an impact on their low motivation and learning achievement to overcome this problem, the researcher proposed the use of the CLIS (Conceptual Learning in Science) leaming model. The research conducted showed that this model was able to significantly increase students' learning motivation (Ariana, 2022). From the results of the study, it can be concluded that the CLIS model is more effective in increasing students' science learning motivation compared to conventional learning models.

CONCLUSION

The role of science teachers in inspiring the younger generation, it is clear that science teachers have a crucial role in developing the future of education and social progress. They not only teach science, but also encourage students to discover their interest in science and technology. A teacher can be an inspiration to her students through her actions, dedication and example Exemplary behavior, teaching skills and work ethics can motivate students to study harder and achieve higher. To create quality education, teachers need to continuously improve their competence. This can be achieved through continuous training, keeping up with the latest developments in education and adopting innovative teaching methods and technologies. By being inspiring and continuously improving their competence, a teacher will be able to create a conducive, engaging and effective learning environment. This will help students reach their full potential and produce competent graduates who are ready to face the challenges of the future.

REFERENCES

Afini Alhamdani Essa & Raudatul Ardauyah. (2023). Fisika Fantastis: Guru-Guru Yang Membawa Sains Ke Kehidupan. *SOKO GURU: Jurnal Ilmu Pendidikan*, *3*(3), 66–72. https://doi.org/10.55606/sokoguru.v3i3.3014

Andi Sadriani, M. Ridwan Said Ahmad, & Ibrahim Arifin. (2023). Peran Guru Dalam Perkembangan Teknologi Pendidikan di Era Digital. *SEMINAR NASIONAL DIES NATALIS 62*, *1*, 32–37. https://doi.org/10.59562/semnasdies.v1i1.431

Annury, M. N. (2019). Peningkatan Kompetensi Profesional Guru melalui Penelitian Tindakan Kelas. *Dimas: Jurnal Pemikiran Agama untuk Pemberdayaan*, *18*(2), 177. https://doi.org/10.21580/dms.2018.182.3258

Ariana, I. G. G. (2022). Meningkatkan Aktivitas Belajar IPA Pasca Pandemi dengan Model Pembelajaran CLIS pada Siswa Kelas V SD. *Journal of Education Action Research*, *6*(1), 87. https://doi.org/10.23887/jear.v6i1.44302

Azhara, R. R. A., & Kartini, D. S. (2022). Peranan Pemerintah dalam Menghadapi Pandemi Covid-19 pada Bidang Pendidikan di Indonesia. *PERSPEKTIF*, *11*(4), 1432–1440. https://doi.org/10.31289/perspektif.v11i4.7521

Budiarto, F. (2015). *Keefektifan Model Pembelajaran CLIS (Children Learning In Science) Terhadap Motivasi dan Hasil Belajar IPA*. *4*, 53–61.

Darmadi, H. (2015). Tugas, Peran, Kompetensi, dan Tanggung Jawab Menjadi Guru Profesional. *Edukasi: Jurnal Pendidikan*, *13*(2), 161–174. https://doi.org/10.31571/edukasi.v13i2.113

Elitasari, H. T. (2022). Kontribusi Guru dalam Meningkatkan Kualitas Pendidikan Abad 21. *Jurnal Basicedu*, *6*(6), 9508–9516. https://doi.org/10.31004/basicedu.v6i6.4120

Fatchurrohman, M. (2019). Kompetensi Guru Madrasah Ibtidaiyyah Dalam Pembelajaran Sains Berbasis Pendidikan Karakter. *Mamba'ul 'Ulum*, *15*(1), 71–86. https://doi.org/10.54090/mu.31

Fitria, H., Kristiawan, M., & Rahmat, N. (2019). Upaya Meningkatkan Kompetensi Guru Melalui Pelatihan Penelitian Tindakan Kelas. *Jurnal Pengabdian Masyarakat UNWAHAS*, *4*(1). http://dx.doi.org/10.31942/abd.v4i1.2690

Illahi, N. (2020). Peranan Guru Profesional Dalam Peningkatan Prestasi Siswa Dan Mutu Pendidikan Di Era Milenial. *Jurnal Asy-Syukriyyah*, *21*(1), 1–20. https://doi.org/10.36769/asy.v21i1.94

Jufri, A. W., Ramdani, A., Gunawan, G., Bachtiar, I., & Wildan, W. (2018). Peningkatan Kompetensi Guru IPA Kota Mataram dalam Memfasilitasi Penguasaan Keterampilan Abad Ke 21 Siswa SMP. *Jurnal Pengabdian Magister Pendidikan IPA*, *1*(1). https://doi.org/10.29303/jpmpi.v1i1.207

Jumransyah, Sunaryo, & Wasis. (2014). Pendugaan Struktur Bawah Permukaan Gunungapi Kelud Berdasarkan Survei Gayaberat. *Jurnal Ilmu Pendidikan*, *3*, 1–5. https://doi.org/10.55606/sokoguru.v3i3.3014

Khair, H. (2021). Peran Lembaga Pendidikan dalam Masyarakat di Era Modern. *Darul Ulum*, *12*(2), 24–36. https://doi.org/10.62815/darululum.v12i2.67

Maolana, I., Darmiyanti, A., & Abidin, J. (2023). Strategi Kepemimpinan Kepala Sekolah Yang Efektif Dalam Meningkatkan Kualitas Guru Di Lembaga Pendidikan Islam. *INNOVATIVE: Journal Of Social Science Research*, *3*(4), 83–94. https://doi.org/10.31004/innovative.v3i4.3493

Nurhuda, Z., Fatinova, D., & Wildan, M. (2020). Metode Pengajaran Komunikatif Sebagai Strategi Pembelajaran Bahasa Bagi Siswa Usia Dini. *Jurnal Loyalitas Sosial: Journal of Community Service in Humanities and Social Sciences*, *2*(1), 1. https://doi.org/10.32493/JLS.v2i1.p1-14

Palettei, A. D., & Sulfemi, W. B. (2019). Pengaruh Kelompok Kerja Guru (KKG) Terhadap Peningkatan Kompetensi Pedagogik dan Kemampuan Menulis Karya Ilmiah. *JPDI (Jurnal Pendidikan Dasar Indonesia)*, *4*(2), 53. https://doi.org/10.26737/jpdi.v4i2.1522

Savitri, A. S., Sallamah, D., Permatasari, N. A., & Prihantini, P. (2022). Peran Strategi Pembelajaran Terhadap Motivasi Belajar Siswa. *Jurnal Pendidikan Sosiologi dan Humaniora*, *13*(2), 505. https://doi.org/10.26418/j-psh.v13i2.54825

Sibela, S., Rahman, N. A., & Hamid, F. (2024). Analysis of Cognitive Abilities of Class VII Students In Physics Learning After the Application of The Model Advance Organizer Learning. *Islamic Journal of Integrated Science Education (IJISE)*, *3*(2), 1–11. https://doi.org/10.30762/ijise.v3i2.3018

Sihombing, A. S., Rahardjo, R. S., & Rachman, I. F. (2024). Peran Guru dan Pendidik dalam Menumbuhkan Literasi Digital dan Mendukung Pembangunan Berkelanjutan. *Jurnal Multidisiplin Ilmu Akademik*, *1*, 361–370. https://doi.org/10.61722/jmia.v1i3.1462

Sri Astutik, Subiki, & Singgih Bektiarso. (2021). Pelatihan Penelitian Tindakan Kelas (PTK) Bagi Guru SMAN Panarukan Situbondo. *Jurnal Inovasi Penelitian dan Pengabdian Masyarakat*, *1*(1), 54–62. https://doi.org/10.53621/jippmas.v1i1.5

Sukirman. (2020). Efektivitas Kelompok Kerja Guru (KKG) dalam Peningkatan Kompetensi Guru. *Indonesian Journal of Education Management & Administration Review*, *4*(1), 206–212. http://dx.doi.org/10.4321/ijemar.v4i1.4385

Taib, M. (2021). Pembelajaran IPA Berbasis Mind Mapping dalam Pengembangan Kemampuan Berpikir Kritis, Kreatif, Komunikatif, dan Kolaboratif. *Jurnal Didaktika Pendidikan Dasar*, *5*(2), 465–486. https://doi.org/10.26811/didaktika.v5i2.345

Widyastuti, N., & Widiyaningrum, P. (2017). Analisis Kompetensi Guru Biologi Berdasarkan Persepsi Siswa SMA di Kota Semarang. *Journal of Innovative Science Education*, *6*, 213–226. https://doi.org/10.15294/jise.v6i2.15535

Wulandari, R. W., & Rochana, S. (2022). Application of React Learning Model to Increase Students' Physics Learning Activities and Achievements. *Islamic Journal of Integrated Science Education (IJISE)*, *1*(1), 33–52. https://doi.org/10.30762/ijise.v1i1.279

Zukmadini, A. Y., Karyadi, B., & Rochman, S. (2021). Peningkatan Kompetensi Guru Melalui Workshop Model Integrasi Terpadu Literasi Sains Dan Pendidikan Karakter Dalam Pembelajaran IPA. *Publikasi Pendidikan*, *11*(2), 107. https://doi.org/10.26858/publikan.v11i2.18378