

RESEARCH ARTICLE

Divergent thinking skill of madrasa teachers: Engaging metacognitive and professional development in teaching professionalism

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ABSTRACT

Much research has been conducted on divergent thinking, but it has not been found involving metacognition and professionalism in madrasa teachers. This research aims to determine the influence of metacognitive and professionalism on *madrasah teachers'* divergent thinking skills in teaching. This research used ex post facto involving 297 madrasa teachers. To collect data, questionnaires and inference statistics were used as data analysis techniques and to test hypotheses that have been determined through ANOVA tests and linear regression. The influence of metacognition on madrasa teachers' divergent thinking skills is very significant. Metacognition helps teachers to be more aware of their thinking processes, improve their ability to generate diverse ideas, and develop creativity and flexibility in solving problems. Professionalism has a significant influence on madrasa teachers' divergent thinking skills. With in-depth knowledge, skills in managing the classroom, openness to innovation, and creative problem-solving abilities, teachers can more easily develop various ideas and solutions to overcome learning challenges. This research is still limited to a small sample, namely only *madrasah aliyah* teachers and is localized to madrasas in Riau Province. Apart from that, there are also variables involved in influencing the divergent thinking skills of madrasa teachers, while there are still many other variables that influence it. This is an opportunity for future research to be developed.

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1. INTRODUCTION

Education in Indonesia faces various challenges, one of which is the need to improve the quality of learning in line with current developments (Tambak, Hamzah, et al., 2022; Alcota et al., 2023). One important aspect that plays a role in improving the quality of education is the teacher's ability to develop critical and creative thinking skills, especially in dealing with complex problems that arise in teaching (Ramdani et al., 2021; Kuloğlu & Karabekmez, 2022). One approach that can be used to achieve this is

through developing divergent thinking skills, namely the ability to produce various solutions or ideas in dealing with a problem (Widana et al., 2020; Alabbasi et al., 2022; Fauziah, Marmoah, Murwaningsih, et al., 2020). Divergent thinking skills are an important competency in the world of education because they encourage teachers to think more broadly, flexibly and innovatively. This is very relevant to learning needs which require teachers to not only provide information, but also facilitate students to be able to think creatively and critically in solving problems (Fauziah, Marmoah, Murwaningsih, et al., 2020; Alabbasi et al., 2022; (Tanak, 2020). Thus, teachers who have divergent thinking skills will be better able to create conducive and dynamic learning situations (Liu et al., 2023; Zebehazy et al., 2020).

A number of studies show that teachers who have divergent thinking skills are better able to support students in developing creativity and problem solving skills (Yehya, 2020; Liu et al., 2023; Abdullah et al., 2025; Gene Rose M. David et al., 2024). More specific research regarding the divergent thinking skills of madrasa teachers is still relatively limited. However, several studies in Indonesia reveal the importance of developing critical and creative thinking skills in the context of Islamic education. Fauziah, Marmoah, & Murwaningsih (2020) research, for example, found that madrasa teachers tend to be less involved in training that leads to the development of divergent and metacognitive thinking skills. In fact, a creative and reflection-based learning approach is very necessary to create a generation that is not only intelligent but can also think innovatively and contextually. A number of studies show that teachers who have divergent thinking skills are better able to support students in developing creativity and problem solving skills (Wu et al., 2019; Shettar et al., 2020). However, applying divergent thinking in teaching requires a process of reflection and self-evaluation which is closely related to metacognition (Eragamreddy, 2023; Widana et al., 2020).

Several studies also show the importance of collaboration between metacognitive development and teacher professionalism development to improve divergent thinking skills. Research by Deliany & Cahyono (2020) found that metacognitive reflection-based training designed for madrasah teachers was able to improve their ability to design more creative and varied learning activities, thus further supporting the development of students' potential in divergent thinking. Research on metacognition in teacher education shows that metacognition can improve the quality of teaching through better reflection and planning. Teachers who develop metacognitive skills are better able to assess student needs, evaluate the effectiveness of the methods used, and adapt to create more effective learning condition (Sun & Zhang, 2023; Muhid et al., 2020; Robillos & Bustos, 2022). In this case, metacognitive skills are directly related to divergent thinking skills, because both concepts involve the ability to see various solutions or approaches to problems (Robillos & Bustos, 2022; Ramdani et al., 2022).

In madrasas, which have a distinctive educational framework with the integration of religious and academic values, teachers' professional development also includes increasing their understanding of the relevant curriculum, as well as the ability to adapt teaching methods that support divergent thinking skills (Skantz-Åberg et al., 2022; Zeng, 2023; Avalos, 2011; Tambak et al., 2023). In this case, the professionalism of teachers in madrasas is not only focused on mastering the material, but also on the ability to design learning that challenges and inspires students to think creatively (Bergmark, 2023; Tambak, Ahmad, et al., 2022). Apart from that, the role of teacher professionalism is also very important in developing divergent thinking skills. A professional teacher not only has adequate pedagogical knowledge and skills, but also continuously strives to develop themselves through training and reflection on their teaching practices (Tambak & Sukenti, 2020a). This professional development will enrich teachers' insights and skills and give them better tools to encourage students to think creatively and critically.

Quality education depends not only on the quality of materials and facilities, but also on the quality of teaching provided by teachers. Divergent thinking skills, which include the ability to generate a variety of creative solutions or ideas, are increasingly considered important competency that needs to be developed in the learning process (Yehya, 2020; Liu et al., 2023; Gene Rose M. David et al., 2024). Divergent thinking allows teachers to manage the classroom dynamically, solve problems creatively, and create innovative learning environments. For this reason, research on teachers' divergent thinking skills, especially in the madrasa environment, needs to dig deeper into the relationship between

metacognitive development and teacher professionalism in the context of effective teaching (Wu et al., 2019; Shettar et al., 2020; Tambak & Sukenti, 2020b). Overall, the divergent thinking skills of madrasah teachers show that metacognitive development and teacher professionalism play an important role in improving divergent thinking abilities. Metacognitive development gives teachers the tools to recognize and manage their thinking processes, while professional development helps them continually adapt to demands and innovations in learning (Sun & Zhang, 2023; Muhid et al., 2020; Robillos & Bustos, 2022). Therefore, training that involves these two aspects can be an effective solution for improving the quality of teaching in madrasas, by prioritizing the development of divergent thinking skills which are essential for creating learning that is creative, innovative and relevant to the needs of the 21st century.

Madrasas as Islamic educational institutions in Indonesia have a strategic role in producing a generation that is not only intelligent in academic aspects, but also has the ability to think creatively and innovatively (Tambak et al., 2020; Tambak, Ahmad, et al., 2022; Zainuddin et al., 2022). Therefore, it is important to research how madrasa teachers' divergent thinking skills can be improved through their metacognitive development and professionalism. This research aims to explore the factors that influence the divergent thinking skills of madrasa teachers and identify efforts that can be made to improve these abilities through metacognitive development and professionalism. By understanding and developing the divergent thinking skills of madrasa teachers, it is hoped that a more effective, creative and innovative learning process can be created, which ultimately contributes to improving the quality of education in madrasas and also in the national education context as a whole.

2. LITERATURE REVIEW

Divergent thinking skills are the ability to produce creative and diverse ideas or solutions in dealing with a problem or situation (Widana et al., 2020; Bedir, 2019; Murwaningsih & Fauziah, 2022). This skill emphasizes the variety of ideas and perspectives that can emerge from a single problem, without being limited to a single solution or answer. Divergent thinking is different from convergent thinking, which focuses on finding the right or correct solution based on a predetermined approach (Guo et al., 2022; Fauziah, Marmoah, & Murwaningsih, 2020). Divergent thinking skills involve mental processes that lead to a broad exploration of ideas, allowing a person to think more flexibly and creatively, and see more possibilities in facing challenges (Mardiana & Kuswanto, 2017). This is very important, both in the educational context and in everyday life, because it allows individuals to adapt to change, find new solutions, and overcome various problems in more innovative ways. Characteristics of divergent thinking skills (Hidayati et al., 2021; Zahno & Hossner, 2023; Murwaningsih & Fauziah, 2021): Flexibility: The ability to change perspectives and look for different ways of looking at a problem. Creativity*: Creating new, original and unusual ideas that may not have been considered before. Elaboration: Developing existing ideas, enriching existing concepts with additional details and perspectives. Originality: Producing solutions or ideas that are unique and different from existing ones. Idea production: Generating many ideas in a short time and trying different approaches to a problem.

In an educational context, divergent thinking skills are very important to encourage students to think more creatively and be open to various ideas (Hidayati et al., 2021; Zahno & Hossner, 2023; Murwaningsih & Fauziah, 2021). These skills help them not only in solving academic problems, but also in developing the ability to think critically, make better decisions, and improve emotional and social intelligence (Guo et al., 2022; Fauziah, Marmoah, & Murwaningsih, 2020). For a teacher, divergent thinking skills are also important for designing learning that is more innovative and can accommodate the needs of diverse students. By thinking divergently, teachers can create a learning environment that is more flexible, challenging, and empowers students to think more broadly and critically (Guo et al., 2022; Fauziah, Marmoah, & Murwaningsih, 2020). Thus, divergent thinking skills are very valuable skills in the world of education, because they not only enrich the teaching and learning process, but also prepare students to face complex and changing future challenges (Hidayati et al., 2021; Zahno & Hossner, 2023; Murwaningsih & Fauziah, 2021).

Metacognition refers to awareness and control of one's own thought processes, which includes the ability to plan, monitor, and evaluate the learning strategies used (Sun & Zhang, 2023; Muhid et al., 2020; Robillos & Bustos, 2022). In the context of teaching, metacognition allows teachers to become more aware of the approaches they use in teaching, recognize their successes or failures, and adapt teaching techniques to improve learning outcomes. Metacognitive refers to everything related to awareness and control of our thinking and learning processes (Robillos & Bustos, 2022; Ramdani et al., 2022). In general, this term describes the ability to *understand, control, and reflect* on our own cognitive processes—that is, how we think, learn, and solve problems. Metacognition includes knowledge about various strategies that can be used in thinking and learning, as well as the ability to assess and organize these processes to make them more effective.

More specifically, metacognition consists of two main components (Sun & Zhang, 2023; Muhid et al., 2020; Robillos & Bustos, 2022): Metacognitive knowledge: Is an understanding or awareness of how we think and learn. This includes an understanding of our strengths and weaknesses in processing information, as well as knowledge of various strategies that can be used to optimize thinking and learning processes. There are three types of metacognitive knowledge, namely: declarative knowledge is knowing facts or information about ourselves (for example, knowing that we learn better with images than text); Procedural knowledge, namely knowing how to use certain strategies to solve problems or learn (for example, knowing how to organize information or create a learning plan); Strategic knowledge is knowing when and why to use certain strategies in different situations (Robillos & Bustos, 2022; Ramdani et al., 2022). Metacognitive regulation: This involves the ability to plan, monitor, and evaluate our thinking or learning processes. Metacognitive regulation includes decisions about how to begin a task, monitoring whether we are on the right track during the learning or thinking process, and evaluating the results to see whether our goals are achieved (Robillos & Bustos, 2022; Ramdani et al., 2022). The components of metacognitive regulation are; planning, namely the process of planning the approach or strategy that will be used in a task or lesson; monitoring, namely monitoring the extent to which we understand or master the material or task being worked on; and evaluation, namely assessing the results of the strategy or process that has been implemented, to determine whether the results are adequate or need adjustment (Sun & Zhang, 2023; Muhid et al., 2020; Robillos & Bustos, 2022).

The development of teacher professionalism has become a major focus in many educational studies. Teacher professionalism, which involves increasing competence through continuing education, training, and reflective experience, plays an important role in the development of divergent thinking skills (Tambak et al., 2020; Tambak, Ahmad, et al., 2022; Zainuddin et al., 2022). Teachers who engage in continuous professional development tend to be more open to innovative learning approaches, are able to create learning conditions that support student creativity, and can develop their divergent thinking skills (Bergmark, 2023; Tambak, Ahmad, et al., 2022). Professional development refers to a series of activities designed to improve a person's knowledge, skills and competence in their professional field, both individually and collectively. The aim of professional development is to ensure that individuals have relevant and up-to-date skills, as well as the ability to adapt to changes in the job or industry in which they work. In the educational context, professional development generally refers to efforts made by teachers, education administrators, or other educational personnel to improve the quality of teaching and learning (Tambak et al., 2020; Tambak, Ahmad, et al., 2022).

The components of professional development are (Skantz-Åberg et al., 2022; Zeng, 2023; Avalos, 2011; Tambak et al., 2023); First, increasing knowledge and skills. Professional development helps individuals to update and expand their knowledge in a specific field. For example, a teacher will continually learn about the latest educational theories, teaching methodologies, or relevant educational technologies. Second, training and courses, namely attending training, workshops or courses to improve practical or technical skills needed in daily work. This training can take the form of technical training, soft skills training, or academic courses. Third, self-reflection is a process of reflection and self-evaluation that allows individuals to assess their performance and look for areas that can be improved. It helps a person to become more aware of the strengths and weaknesses in his profession and make necessary changes. Fourth, collaboration and professional networks, namely interaction with

colleagues, both in the work environment and outside, to share knowledge and experience. These collaborations often provide opportunities for individuals to learn from others' experiences and share best practices. Fifth, career development, which focuses on increasing competencies that enable individuals to advance in their careers. Professional development can open up opportunities for promotion or improve performance at work.

3. RESEARCH METHOD

The research used *ex-post facto* (Sugiyono, 2015; Khatri, 2020; Valverde-Berrocso et al., 2020) to explore the understanding and feelings of Madrasah Aliyah teachers about metacognitive and professionalism on developing divergent thinking skill of madrasa teacher in madrasah learning. Selected 297 madrasah teachers in of state Madrasahs Aliyah in all regencies/cities in Riau Province teaching the subjects of Akidah Akhlak, al-Qur'an Hadits, Fiqh, and Islamic Cultural History. A questionnaire was used as a data collection tool. The questionnaire is considered as one of the right ways to get information from respondents (Creswell, 2013; Tisocco & Liporace, 2021; Creswell, 2015; Tuckman, 1999). It is a data collection technique that is performed by giving a set of written questions to respondents with closed type of questions. The questionnaire is the easiest way to get information (Wiersma, 2000). The questionnaire instruments were compiled into three parts, namely metacognitive scale instruments, professionalism, and divergent thinking skill of madrasa teachers. The research instruments were tested for validity by constructing validity (experts judgment), content validity (comparing the contents of the instrument with the theory), and external validity (comparing to find similarities) between the criteria on the instrument and empirical facts in the field. While the reliability of the instrument was tested by testing external: test-retest (stability), equivalent, and a combination of both, and internal: analyzing the consistency of the items on the instrument (Wiersma, 2000; Sugiyono, 2014).

Inference statistics were used as data analysis techniques and to test hypotheses that have been determined through ANOVA tests and linear regression ($p < 0.05$) (Tuckman, 1999; Riduwan, 2014). The hypothesis of this research is; (1) there is an influence of metacognitive on developing divergent thinking skill of madrasa teachers; (2) there is an influence of professionalism on developing divergent thinking skill of madrasa teachers; and (3) there is an influence of metacognitive and professionalism on developing divergent thinking skill of madrasa teachers. The data were then analyzed using the Statistical Product Service Solution (SPSS) version 25.

4. RESULTS

Table 1, using simple linear regression, shows that there is an effect of metacognitive on the divergent thinking skill of madrasa teachers. This is shown by the value of ($F = 25.676$), and the probability value (0.000) that is smaller than the value of significance (0.05) ($P < 0.05$). Based on this case, the hypothesis of research stating that there is influence of divergent thinking skill on the divergent thinking skill of madrasa teachers is accepted.

Table 1. The Influence of Metacognitive on Divergent Thinking Skill of Madrasa Teachers

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14098.359	1	14098.359	25.676	.000 ^b
	Residual	174607.191	319	549.079		
	Total	188705.550	320			

b. Predictors: (Constant), Metacognitive

Furthermore, Table 2 clearly illustrates the effect of metacognitive on the divergent thinking skill of madrasa teachers of 0.801 or 80.1%. This is indicated by the value of ($R = 0.895$) and the value of ($R \text{ Square} = 0.801$). $R \text{ Square}$ value of (0.801) or (80.1%) describes that the influence of metacognitive on the divergent thinking skill of madrasa teachers is in the 'high' category.

Table 2. Magnitude of Metacognitive on Divergent Thinking Skill of Madrasa Teachers

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.895 ^a	.801	.672	23.432	.888

a. Dependent Variable: Divergent thinking skill madrasa teacher

Table 3, using simple linear regression, shows that there is an influence of professionalism on the divergent thinking skill of madrasa teachers. This is shown by the value of ($F = 24.776$), and the probability value (0.000) that is smaller than the value of significance (0.05) ($P < 0.05$). Based on this case, the hypothesis of research stating that there is influence of professionalism on the divergent thinking skill of madrasa teachers is accepted.

Table 3. The Influence of Professionalism on Divergent thinking Skill of Madrasa Teachers

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	14098.359	1	14098.359	24.776	.000 ^b
Residual	174607.191	319	549.079		
Total	188705.550	320			

b. Predictors: (Constant), Professionalism

Furthermore, Table 4 clearly illustrates the magnitude of influence of professionalism on the divergent thinking skill of madrasa teachers of 0.075 or 7.5%. This is indicated by the value of ($R = 0.237$) and the value of ($R \text{ Square} = 0.075$). $R \text{ Square}$ value of (0.075) or (7.5%) describes that the effect of professionalism on the divergent thinking skill of madrasa teachers is in the 'low' category.

Table 4. Magnitude of Professionalism Influence on Divergent Thinking Skill of Madrasa Teachers

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.273 ^a	.075	.072	23.432	.888

a. Dependent Variable: Divergent Thinking Skill of Madrasa Teacher

Table 5, using simple linear regression, shows that there is an influence of metacognitive and professionalism on the divergent thinking skill of madrasa teachers. This is shown by the value of ($F = 27.376$), and the probability value (0.000) that is smaller than the value of significance (0.05) ($P < 0.05$). Based on this case, the hypothesis of research stating that there is influence of metacognitive and professionalism on the divergent thinking skill of madrasa teachers is accepted.

Table 5. The Influence of Metacognitive and Professionalism on Divergent Thinking Skill

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	14098.359	1	14098.359	27.376	.000 ^b
Residual	174607.191	319	549.079		
Total	188705.550	320			

b. Predictors: (Constant), Metacognitive and Professionalism

Furthermore, Table 6 clearly illustrates the influence of metacognitive and professionalism on the divergent thinking skill of madrasa teachers of 0.591 or 59.1%. This is indicated by the value of ($R = 0.769$) and the value of ($R \text{ Square} = 0.591$). $R \text{ Square}$ value of (0.591) or (59.1%) describes that the influence of metacognitive and professionalism on the divergent thinking skill of madrasa teachers is in the 'moderate' category.

Table 6. Magnitude of Metacognitive and Professionalism on the Divergent Thinking Skill

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.769 ^a	.591	.172	23.432	.888

a. Dependent Variable: Divergent thinking skill of madrasa teachers

5. DISCUSSION

The influence of metacognition on madrasa teachers' divergent thinking skills is very significant. Metacognition helps teachers to be more aware of their thinking processes, improve their ability to generate diverse ideas, and develop creativity and flexibility in solving problems. In addition, metacognition also supports teachers in reflection, collaboration, and decision making, all of which are very important in creating effective and innovative learning. Thus, the development of metacognitive skills among madrasa teachers can contribute to improving the quality of education and more creative learning (Wu et al., 2019; Shettar et al., 2020; Tambak & Sukenti, 2020b).

Metacognition is an individual's awareness and understanding of their own thought processes. In the educational context, especially among madrasa teachers, metacognition has an important role in improving divergent thinking skills (Sun & Zhang, 2023; Muhid et al., 2020; Robillos & Bustos, 2022). Divergent thinking is the ability to generate many different ideas or solutions to a problem. This ability is very important in supporting creative and innovative learning, which is very relevant in religious education which prioritizes deep understanding and diverse perspectives. Metacognition helps teachers to be more aware of their way of thinking in facing various educational challenges. By understanding their own thought processes, teachers can more easily find different approaches to addressing problems that arise, which is an important aspect of divergent thinking (Muhid et al., 2020; Robillos & Bustos, 2022; Firdaus et al., 2025). This awareness allows teachers to explore more possibilities and new, more creative ideas. Metacognition supports teachers in identifying effective thinking strategies and modifying their approach to be more open to various solutions. Teachers who have good metacognitive skills tend to be more able to produce a variety of ideas and alternative solutions to the problems they face, which is the essence of divergent thinking.

By having high metacognitive awareness, teachers can develop flexibility in the way they solve problems. They can evaluate various strategies that have been used previously, determine what worked and what did not, and adapt new, more effective strategies (Sun & Zhang, 2023; Muhid et al., 2020; Robillos & Bustos, 2022; Rasyidi et al., 2025). This supports the divergent thinking process, where teachers must be able to see problems from various points of view and find various solutions. Metacognition involves the process of reflection, namely thinking about the thought process itself. Teachers who are trained in metacognitive skills will be better able to reflect on the learning approaches they have taken. This can increase their creativity in designing more varied and innovative teaching methods. This reflection strengthens divergent thinking skills because teachers are always looking for new and better ways to overcome educational challenges (Sun & Zhang, 2023; Muhid et al., 2020; Robillos & Bustos, 2022). In the madrasa context, teachers are often faced with problems that require a creative approach and do not always have a clear solution. Metacognition helps teachers to be more creative in formulating solutions, by considering various perspectives and looking for different ways of solving problems. This is very important in the context of religious education which prioritizes in-depth knowledge and understanding as well as critical thinking skills (Robillos & Bustos, 2022; Ramdani et al., 2022). Madrasah teachers who have strong metacognitive skills will be more likely to create innovative and problem-solving based learning experiences. With divergent thinking skills, they can design more creative and challenging learning for students, encouraging students to also develop their critical and creative thinking skills (Muhid et al., 2020; Robillos & Bustos, 2022).

The findings of this research also reveal that professionalism has a significant influence on madrasah teachers' divergent thinking skills (Hidayati et al., 2021; Zahno & Hossner, 2023; Murwaningsih & Fauziah, 2021). With in-depth knowledge, skills in managing the classroom, openness to innovation, and creative problem-solving abilities, teachers can more easily develop various ideas and solutions to overcome learning challenges. Professional teachers will be better able to design creative learning and encourage students to think outside the box, thereby improving their divergent thinking skills. Professionalism supports the creation of an environment conducive to the development of creativity and diverse thinking, which is very important in madrasa education based on religious values and character formation.

Professionalism refers to the qualities and abilities possessed by a professional in carrying out his duties, including knowledge, skills, ethics and behavior that support the achievement of work goals effectively and efficiently (Tambak et al., 2020; Tambak, Ahmad, et al., 2022; Zainuddin et al., 2022). In the context of madrasa teachers, professionalism covers various aspects, such as mastery of learning material, teaching skills, commitment to the profession, and the ability to adapt to educational developments. The influence of professionalism on madrasa teachers' divergent thinking skills is very important, because divergent thinking is the ability to produce various ideas, solutions or possibilities in dealing with problems (Yehya, 2020; Liu et al., 2023; Muhajir et al., 2025; Gene Rose M. David et al., 2024). Professional teachers will be more open to new ideas, think creatively, and be able to overcome the challenges faced in the world of education. Professionalism includes strong mastery of teaching material. Professional teachers have a deep understanding of the material being taught, including the religious context, which allows them to think more creatively and produce various ideas in presenting the material. With broad and deep knowledge, teachers can explore various ways to teach complex concepts, which are part of divergent thinking (Skantz-Åberg et al., 2022; Zeng, 2023; Sukenti et al., 2025; Avalos, 2011; Tambak et al., 2023).

Professional teachers are able to recognize the needs and characteristics of their students. This allows them to devise learning strategies that are flexible and can accommodate various student learning styles. This ability to adapt learning approaches according to student needs shows the ability to think divergently, because teachers can create varied learning solutions, utilizing various methods or techniques that suit the situation at hand (Adipat et al., 2023; Situmorang et al., 2022). Professionalism requires teachers to constantly update their knowledge and skills, including following the latest developments in the world of education. Teachers who have high professionalism will be open to innovation and changes in teaching methods (Alciso et al., 2023; Tambak, Ahmad, et al., 2022; Siregar et al., 2022). This encourages them to think more divergently, look for new approaches, and create more effective and innovative solutions to face challenges in the classroom. Teachers who are open to change tend to be more creative in creating a dynamic and interesting learning environment.

Professional teachers tend to be more creative in designing learning experiences. They can develop teaching methods that not only focus on mastering the material, but also on developing critical and creative thinking skills. In this case, divergent thinking is a very important aspect, because teachers need to look for various ways to present material and encourage students to think outside the box (Guo et al., 2022; Fauziah, Marmoah, & Murwaningsih, 2020). This creativity in teaching enriches the learning process and provides space for students to develop their ideas. One of the main characteristics of a professional teacher is the habit of self-evaluation and reflection. By analyzing and evaluating their learning methods and outcomes, teachers can identify strengths and weaknesses in their teaching practices (Widiya Lestari, 2023; Skantz-Åberg et al., 2022; Zeng, 2023; Avalos, 2011; Tambak et al., 2023). Through this reflection, teachers can develop new, more varied ideas in facing challenges, showing their divergent thinking abilities in designing new solutions to improve the quality of learning. Professionalism is also related to critical thinking skills. Professional teachers will question assumptions, evaluate multiple perspectives, and seek better solutions in complex educational situations (Guo et al., 2022; Fauziah, Marmoah, & Murwaningsih, 2020). This critical thinking ability supports each other with divergent thinking, because teachers do not only focus on one solution or approach, but also think in various directions to find the most appropriate solution.

6. CONCLUSION

The influence of metacognition on madrasa teachers' divergent thinking skills is very significant. Metacognition helps teachers to be more aware of their thinking processes, improve their ability to generate diverse ideas, and develop creativity and flexibility in solving problems. In addition, metacognition also supports teachers in reflection, collaboration, and decision making, all of which are very important in creating effective and innovative learning. Thus, the development of metacognitive skills among madrasa teachers can contribute to improving the quality of education and more creative

learning. Professionalism has a significant influence on madrasa teachers' divergent thinking skills. With in-depth knowledge, skills in managing the classroom, openness to innovation, and creative problem-solving abilities, teachers can more easily develop various ideas and solutions to overcome learning challenges. Professional teachers will be better able to design creative learning and encourage students to think outside the box, thereby improving their divergent thinking skills. This research is still limited to a small sample, namely only *madrasah aliyah* teachers and is localized to madrasahs in Riau Province. Apart from that, there are also variables involved in influencing the divergent thinking skills of madrasa teachers, while there are still many other variables that influence it. This is an opportunity for future research to be developed.

AUTHOR CONTRIBUTIONS

Contributions of the authors in this article: Desi Sukenti and Putri Masriani Harahap contributed as concepts and drafters of the article; Hambali Jaili and Muhaemin Muhaemin contributed as data analyzers and interpreters; Mohammad Roshimi Abdullah as the drafter of the manuscript; Rohmani Nur Indah contributed in collecting data and critically revising the article. All authors agree to take responsibility for all aspects of this work.

DISCLOSURE OF INTERESTS

The authors declare that we have no conflict of interest.

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