Volume: 28, Number: 1, April 2026, pp. 88-95
p-ISSN: 1410-8771, e-ISSN: 2580-4812
https://doi.org/10.37303/likhitaprajna.v28i1.970

LIKHITAPRAJNA Jurnal Ilmiah
Fakultas Keguruan dan Ilmu Pendidikan

TEACHER BELIEFS ABOUT GROWTH MINDSET IN PRE-SERVICE MATHEMATICS TEACHING

Hannif Lathifah[1], Indhiadma Parnata[2], Fadhilah Nur Istiqomah[3], Iis Sholekah[4], Khikmatus Shahrin Maghfiroh[5], Ivatus Sunaifah[6], Lailatul Badriyah[7], Surya Sari Faradiba[8]

[1]Universitas Islam Malang, Malang, Indonesia, hanniflathifahh@gmail.com
[2]Universitas Islam Malang, Malang, Indonesia, atmalestud@gmail.com
[3]Universitas Islam Malang, Malang, Indonesia, dhiladra@gmail.com
[4]Universitas Islam Malang, Malang, Indonesia, iissholekah9@gmail.com
[5]Universitas Islam Malang, Malang, Indonesia, khikmatus.shahrin.07@gmail.com
[6]SMA Negeri 4 Malang, Malang, Indonesia, ivatussunaifah30@gmail.com
[7]SMA Negeri 4 Malang, Malang, Indonesia, lailatul.badriyah3424@gmail.com
[8]Universitas Islam Malang, Malang, Indonesia, suryasarifaradiba@unisma.ac.id

ARTICLE INFO

Article history:
Received March 2026
Revised March 2026
Accepted March 2026
Published 2 April 2026

Keywords:
Growth Mindset
Mathematics Learning
Pre-service Teachers
Teacher Beliefs
Scaffolding

To cite this article:
Lathifah, H., Parnata, I., Istiqomah, F., Sholekah, I., Maghfiroh, K., Sunaifah, I., Badriyah, L., & Faradiba, S. (2026). Teacher Beliefs about Growth Mindset in Pre-Service Mathematics Teaching. *Jurnal Likhitaprajna*, *28*(1), 88-95. https://doi.org/10.37303/likhitaprajna.v28i1.970

ABSTRACT

This study explores how classroom discourse reflects the implementation of growth mindset principles in mathematics learning by pre-service teachers during their teaching practicum at SMAN 4 Malang. The research focuses on how feedback practices, questioning strategies, and task design support students' engagement, reasoning, and responses to challenges. A qualitative approach was employed through classroom observations and analysis of instructional interactions conducted by pre-service teachers. The findings reveal that the learning environment demonstrated several key characteristics of a growth mindset-oriented classroom. Pre-service teachers were able to create a supportive atmosphere that encouraged student participation, idea expression, and reasoning. Practices such as promoting student thinking and normalizing mistakes were particularly evident, helping students focus on conceptual understanding rather than merely obtaining correct answers. However, the feedback implementation tended to emphasize correctness rather than students' effort and strategies, and opportunities for productive struggle were limited due to relatively quick intervention and uneven scaffolding. As a result, students had fewer opportunities to engage in sustained independent problem-solving, which is essential for developing persistence and resilience. Overall, the study highlights the need for more explicit emphasis on effort-based feedback and greater opportunities for students to engage with challenging tasks. These improvements are expected to strengthen students' growth mindset, persistence, and deeper understanding in mathematics learning. The contribution of this study lies in providing empirical insights into the implementation of growth mindset principles in mathematics teaching practices by pre-service teachers, particularly in terms of classroom discourse. The findings may serve as a basis for reflection and the development of teacher education programs aimed at designing instructional interactions that better support students' growth mindset development.

Corresponding Author:
Hannif Lathifah
Universitas Islam Malang, Malang, Indonesia; hanniflathifahh@gmail.com

INTRODUCTION

Teacher beliefs are widely acknowledged as a fundamental factor influencing instructional practices, particularly in the context of pre-service teacher education. Beliefs about teaching and learning shape how teachers interpret classroom situations, select instructional strategies, and respond to students' needs (Andilah et al., 2025). These beliefs are not merely abstract ideas but are reflected in classroom actions, especially through instructional language, questioning patterns, and feedback provided to students.

Among various belief systems, the concept of a growth mindset has gained significant attention in recent years. A growth mindset refers to the belief that students' abilities can be developed through effort, persistence, and effective learning strategies. According to Dweck (2006), this perspective emphasizes that intelligence and ability are not fixed traits but can develop through learning experiences. Teachers who hold growth mindset beliefs tend to emphasize the learning process, encourage students to persist when facing difficulties, and view mistakes as opportunities for improvement. In mathematics education, where students often develop fixed assumptions about their abilities, such beliefs may influence students' engagement and learning experiences.

For pre-service teachers, however, the enactment of growth mindset beliefs in classroom practice is often complex and challenging. Many prospective elementary school teachers may understand educational theories conceptually, yet classroom situations frequently present unexpected complexities (Pamungkas et al., 2024). This condition reflects how beliefs, professional identity, and attitudes toward mathematics teaching may influence instructional practice among pre-service teachers (Maghfiroh et al., 2026). Although they may agree with the principles of growth mindset, translating these beliefs into instructional actions requires pedagogical skill and contextual awareness. During teaching practicum, pre-service teachers must manage multiple demands, including delivering content accurately, managing classroom interaction, and supporting student understanding (Faradiba et al., 2025). These conditions may create inconsistencies between teachers' stated beliefs and their classroom practices.

Classroom discourse provides a useful lens for examining how teacher beliefs are enacted in practice. Through verbal interaction with students, teachers may reveal implicit beliefs about learning, ability, and success. Motivating students involves building confidence, encouraging aspirations, setting learning goals, and providing meaningful support (Zubaidah et al., 2017). For instance, statements that emphasize effort and persistence may reflect growth mindset beliefs, whereas interactions that focus primarily on correct answers may indicate more performance-oriented beliefs. These different orientations may also appear simultaneously within the same lesson, suggesting that teacher beliefs are not always enacted consistently.

In addition, instructional strategies and the use of learning media may further reflect how beliefs are translated into classroom practice. Learning media are used to deliver instructional messages and teaching materials during the learning process (Abimanyu, 2016). Teachers who emphasize student thinking and exploration may design activities that encourage discussion and reasoning, while teachers who prioritize efficiency may rely more on direct instruction. Examining these instructional choices may help explain how underlying beliefs are expressed in mathematics classrooms (Faradiba et al., 2024).

However, limited studies examine actual classroom discourse to investigate how growth mindset beliefs are enacted in instructional practice, particularly among pre-service teachers. Existing studies have frequently relied on self-reported perceptions or questionnaire-based findings, which may not fully capture the complexity of classroom interaction. Although previous studies have discussed the relationship between beliefs, identity, and teaching attitudes among pre-service mathematics teachers (Maghfiroh et al., 2026), limited attention has been given to how these beliefs are reflected through actual classroom discourse and interaction. As a result, there is still limited understanding of how growth mindset beliefs are expressed, negotiated, and sometimes contradicted during real-time teaching practices. Therefore, this

study aims to explore how growth mindset beliefs are enacted in a pre-service mathematics classroom. By analyzing classroom discourse and instructional practices, this research seeks to provide deeper insights into how these beliefs are reflected in teaching and how they shape classroom interaction.

METHOD

This study employed a qualitative case study design to explore the enactment of growth mindset beliefs in a pre-service mathematics classroom. This approach was appropriate because it supports an in-depth understanding of complex phenomena and multiple perspectives in authentic research settings (Creswell, 2014). The participant was a pre-service mathematics teacher conducting teaching practicum at SMAN 4 Malang from February to March 2026. The observed lesson focused on the position of a point relative to a circle through contextual problem-solving activities, with students working collaboratively in small groups.

Data were collected through observation, interviews, and documentation, as suggested in qualitative research procedures (Sugiyono, 2019). The main data source was a recorded classroom session, which was transcribed verbatim to capture teacher–student interactions, including explanations, questioning, feedback, and responses to student errors. The data were analyzed using discourse analysis to identify patterns of growth mindset enactment in the teacher's instructional language and classroom interactions (Raharja & Ghozali, 2020). Coding was conducted through both deductive and inductive approaches. Deductive coding was guided by growth mindset indicators, such as effort encouragement, process-oriented feedback, and normalization of mistakes, while inductive coding allowed new patterns to emerge from the data. The coded data were then categorized and interpreted to examine how growth mindset beliefs were reflected, negotiated, or contradicted in classroom practice (Isminingsih et al., 2025).

To ensure trustworthiness, the data were examined repeatedly and compared across transcript segments. Interpretations were supported by direct excerpts to maintain transparency and reduce bias (Jacobs et al., 2021). Peer discussion was also used to review coding decisions and improve analytical consistency. A structured coding scheme was developed to strengthen the rigor of the analysis. The scheme included categories, indicators, operational definitions, and transcript examples used to identify growth mindset beliefs in classroom discourse. The detailed coding scheme is presented in Table 1.

Table 1. Coding Scheme for Analyzing Growth Mindset Beliefs in Classroom Discourse

Category	Indicator	Operational Definition
Encouragement of Effort	Motivational statements	Teacher encourages students to try, persist, and believe in their ability
	Positive reinforcement	Teacher affirms students' attempts regardless of correctness
Valuing Learning Process	Emphasis on understanding	Teacher highlights the importance of process over final answer
	Allowing revision	Teacher permits visible correction and improvement of work
Normalizing Mistakes	Error acceptance	Teacher treats mistakes as natural in learning
	Error as learning opportunity	Teacher uses mistakes as a basis for explanation
Promoting Student Thinking	Open-ended questioning	Teacher asks questions that require reasoning and explanation
	Encouraging independence	Teacher invites students to make decisions or think independently
Challenge Orientation	Encouraging engagement	Teacher prompts students to engage with tasks actively
	Managing productive struggle	Teacher allows time and space for students to think

RESULTS AND DISCUSSION

Results

The analysis of classroom discourse based on the growth mindset coding scheme shows that all five categories, namely encouragement of effort, valuing the learning process, normalizing mistakes, promoting student thinking, and challenge orientation, are present, although with varying levels of consistency and depth. Throughout the lesson, the teacher repeatedly encouraged students to participate by inviting them to recall prior knowledge and respond to questions, even when they were unsure. This is reflected in the teacher's question, *"kalau boleh tau kemarin tuh udah belajar apa aja sih, ada yang bisa nyebutkan?"* which can be translated as *"what did we learn yesterday, can anyone mention it?"*. When a student responded *"gak inget pak,"* the teacher continued guiding the discussion instead of shifting to another student, demonstrating persistence in encouraging participation.

The teacher also demonstrated a strong orientation toward valuing the learning process by emphasizing conceptual understanding and reasoning. For example, the teacher instructed, *"kalian bandingkan dengan jari-jari lingkaran,"* which means *"compare it with the radius of the circle,"* guiding students to analyze relationships rather than memorize procedures. In another instance, the teacher stated, *"kalian bisa simpulkan sendiri ya analisisnya bagaimana,"* translated as *"you can draw your own conclusion from the analysis,"* which highlights the expectation that students construct their own understanding.

In relation to normalizing mistakes, the teacher's responses to student errors indicate a supportive and constructive approach. When discussing a student's work, the teacher said, *"sebenarnya sudah benar, cuma waktu kesimpulan akhirnya mungkin kurang teliti,"* which can be translated as *"the method is actually correct, but the final conclusion is a bit inaccurate."* This statement acknowledges the student's partial success while gently correcting the mistake, reinforcing the idea that errors are part of the learning process.

The promotion of student thinking appears as one of the most prominent aspects of the lesson. The teacher frequently used open-ended questions to encourage reasoning, such as *"kenapa kok bisa?"* meaning *"why do you think that is?"* and *"kira-kira analisis kalian bagaimana?"* meaning *"what is your analysis?"*. These questions required students to explain their thinking and justify their answers. The teacher also encouraged independent work by stating, *"kalian bisa lanjutkan sendiri,"* or *"you can continue working on it yourselves,"* which supports the development of student autonomy.

The lesson also incorporated elements of challenge orientation through the provision of progressively complex tasks. For instance, the teacher asked, *"Coba tentukan nilai K-nya berapa,"* translated as *"try to determine the value of K,"* encouraging students to engage with more advanced problems. The teacher also provided support by saying, *"kalau masih kesulitan bisa tanyakan ke saya,"* meaning *"if you still find it difficult, you can ask me,"* which balances challenge with guidance. However, the teacher often intervened relatively quickly when students encountered difficulties, and scaffolding was not evenly distributed among all students.

Overall, the findings indicate that the classroom discourse reflects key characteristics of a growth mindset-oriented learning environment, particularly in promoting reasoning and treating mistakes as learning opportunities. However, the implementation could be strengthened by placing more explicit emphasis on effort rather than correctness and by allowing students more time to engage independently with challenging tasks.

Discussion

The repeated encouragement for students to participate, even when they expressed uncertainty, suggests that the teacher attempted to establish a classroom environment in which students were expected to remain engaged in the learning process rather than avoid participation due to fear of failure. Such interactions reflect an instructional orientation that seeks to promote students' willingness to try and contribute during mathematics learning. However, although

encouragement was consistently observed, the reinforcement provided during classroom interaction still tended to emphasize answer correctness more explicitly than students' effort, strategies, or persistence. This indicates that the enactment of effort-oriented feedback, which constitutes a central component of growth mindset pedagogy, had not yet been fully optimized. In this context, teachers play a crucial role in implementing growth mindset principles through classroom interaction, particularly in the ways feedback is communicated and interpreted by students (Wahidah et al., 2022; Zhang, 2024; Wulandari et al., 2024).

The teacher's emphasis on conceptual understanding and analytical reasoning demonstrates an instructional orientation that positions mathematics learning as a process of meaning construction rather than procedural memorization. By encouraging students to compare mathematical relationships and formulate conclusions independently, the teacher created opportunities for students to actively construct conceptual understanding through reasoning processes. This finding suggests that the classroom discourse not only facilitated procedural engagement but also supported deeper cognitive processing and reflective thinking. Such process-oriented instructional practices are significant because they may strengthen students' beliefs that mathematical understanding can develop progressively through learning experiences, effort, and reflection. This interpretation aligns with previous studies emphasizing that feedback focused on learning processes, positive language, and the constructive use of errors contributes to the development of students' growth mindset in mathematics learning (Darling-Hammond et al., 2020; Borji et al., 2019; Muthukrishnan et al., 2024).

The manner in which mistakes were addressed further reflects the emergence of a supportive classroom culture in which errors were positioned as productive components of learning rather than indicators of failure. By acknowledging partially correct reasoning before addressing inaccuracies, the teacher appeared to reduce the negative emotional consequences commonly associated with making mistakes in mathematics classrooms. This interaction may contribute to students' confidence and willingness to remain engaged in problem-solving activities despite experiencing difficulty. Moreover, the constructive treatment of mistakes suggests that the classroom discourse encouraged students to perceive errors as opportunities for reflection and conceptual refinement. Such findings reinforce previous research asserting that supportive responses toward mistakes may foster students' resilience, confidence, and participation in mathematics learning (Mera et al., 2022; Tulis et al., 2016; Yulianti et al., 2024; Maliana et al., 2025).

The strong emphasis on open-ended questioning indicates that the teacher attempted to position students' reasoning processes as central to classroom learning activities. Questions requiring explanation and justification encouraged students to externalize their thinking and engage more deeply with mathematical ideas rather than merely produce short or procedural answers. This suggests that the classroom discourse supported intellectual engagement and mathematical reasoning, both of which are fundamental characteristics of growth mindset-oriented instruction. Nevertheless, despite the frequent use of open-ended questioning, the teacher still maintained a relatively dominant role in directing classroom reasoning and discussion. Consequently, opportunities for students to independently explore alternative strategies and develop autonomous mathematical reasoning may have been somewhat constrained. This finding implies that while students were encouraged to think critically, the instructional interaction had not yet fully shifted toward student-centered exploratory discourse (Boaler, 2016; Reeve & Hyeon, 2024).

The implementation of challenge orientation through progressively demanding tasks reflects an effort to cognitively engage students in mathematical problem-solving processes. Simultaneously, the teacher attempted to balance challenge with instructional support by providing guidance when students encountered difficulties. Such interactions indicate an awareness that cognitively demanding tasks require both challenge and scaffolding to sustain student engagement. However, the findings also reveal that teacher intervention frequently

occurred relatively quickly, thereby limiting opportunities for students to persist independently through difficulty. This suggests that the enactment of productive struggle, which constitutes an essential element in the development of perseverance, resilience, and deep conceptual understanding, had not yet been fully maximized. Uneven scaffolding practices may also have influenced the extent to which students were able to experience sustained cognitive engagement during problem-solving activities. These findings support the argument that productive struggle requires sufficient time, cognitive effort, and opportunities for independent exploration in order to effectively foster adaptive problem-solving capacities in mathematics learning (Galdames-Calder et al., 2024; Young et al., 2025; Dinapoli, 2023).

Overall, the findings indicate that the classroom discourse reflects a promising foundation for growth mindset-oriented mathematics instruction, particularly in fostering reasoning, participation, and constructive responses toward mistakes. Nevertheless, the implementation could be further strengthened through more explicit emphasis on effort-oriented feedback and by providing students with greater opportunities to engage independently in sustained cognitively challenging activities. Such improvements may further support the development of students' adaptive beliefs, persistence, and deeper mathematical understanding (Sun, 2019; Yeager et al., 2019).

Table 2. Summary of Findings and Analysis

Growth Mindset Category	Evidence from Classroom Discourse	Interpretation	Level of Implementation
Encouragement of Effort	*"kalau boleh tau kemarin tuh udah belajar apa aja sih…"* / *"what did we learn yesterday…"*	Teacher invites participation and persistence, but feedback focuses more on correctness	Moderate
Valuing Learning Process	*"kalian bandingkan dengan jari-jari lingkaran"* / *"compare it with the radius…"*	Emphasis on reasoning and conceptual understanding	Strong
Normalizing Mistakes	*"sebenarnya sudah benar, cuma… kurang teliti"* / *"the method is correct, but…"*	Errors treated as part of learning, supportive feedback	Strong
Promoting Student Thinking	*"kenapa kok bisa?"* / *"why do you think that is?"*	Encourages explanation, reasoning, and student voice	Strong
Challenge Orientation	*"coba tentukan nilai K-nya berapa"* / *"try to determine the value of K"*	Tasks are challenging but support reduces productive struggle	Moderate

CONCLUSION

The findings of this study indicate that the classroom discourse identified in this study reflects the emergence of several fundamental characteristics of growth mindset-oriented mathematics instruction, particularly in fostering student participation, mathematical reasoning, and constructive responses toward errors as part of the learning process. The findings suggest that the instructional interactions established by the pre-service teacher have contributed to the development of a supportive learning environment that emphasizes conceptual understanding rather than mere answer accuracy. Nevertheless, the enactment of growth mindset principles has not yet been fully optimized, especially with regard to the provision of explicit effort-oriented feedback and the facilitation of productive struggle through sustained opportunities for independent problem-solving. Accordingly, instructional practices need to place greater emphasis on appreciating students' learning processes, strategies, and persistence in order to further cultivate adaptive beliefs, resilience, and deeper mathematical understanding. This study contributes to the growing body of literature by providing empirical evidence concerning the manifestation of growth mindset principles within classroom discourse in mathematics

instruction conducted by pre-service teachers. Furthermore, the findings offer important pedagogical implications for teacher education programs, particularly in supporting prospective teachers to design instructional interactions that more effectively promote students' growth mindset development through meaningful classroom discourse and cognitively engaging learning experiences.

ACKNOWLEDGMENTS

The author would like to express sincere gratitude to the Teacher Professional Education (Pendidikan Profesi Guru/PPG) Program at Universitas Islam Malang for providing financial support for this research.

REFERENCES

Andilah, S., Andriani, N., Inayah, S., Partini, D., Hartiwi, J., Pradana, S., & Jubaeli, A. (2025). Strategi Pembelajaran. Penerbit Widina.

Baharun, H. (2016). Pengembangan media pembelajaran PAI berbasis lingkungan melalui model ASSURE. *Cendekia: Jurnal Kependidikan dan Kemasyarakatan, 14*(2), 231–246. https://doi.org/10.21154/cendekia.v14i2.610

Boaler, J. (2016). Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages and innovative teaching. San Francisco, CA: Jossey-Bass.

Borji, V., Radmehr, F., & Font, V. (2021). The impact of procedural and conceptual teaching on students' mathematical performance over time. International Journal of Mathematical Education in Science and Technology, 52(3), 404–426. https://doi.org/10.1080/0020739X.2019.1688404

Creswell, J. W. (2018). *Research design: Qualitative, quantitative, and mixed methods approach* (5th ed.). Sage Publications.

Darling-hammond, L., Flook, L., Cook-harvey, C., Barron, B., Flook, L., Cook-harvey, C., Darling-hammond, L., Flook, L., Cook-harvey, C., & Barron, B. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, *24*(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791

DiNapoli, J. (2023). Distinguishing between grit, persistence, and perseverance for learning mathematics with understanding. *Education Sciences, 13*(4), Article 402. https://doi.org/10.3390/educsci13040402

Dweck, C. S. (2006). Mindset: The new psychology of success. New York, NY: Random House

Faradiba, S. S., Sari, F. K., Alifiani, & Nursit, I. (2025). Can the domino theory revolutionize the approach to algebraic misconceptions in university students? *AIP Conference Proceedings*, *3333*(1), 20008. https://doi.org/10.1063/5.0291150

Faradiba, S. S., Alifiani, A., & Nasir, N. A. M. (2024). The resolution of quadratic inequality problems in mathematics: Discrepancies between thought and action. Infinity, 13(1), 61-82. https://doi.org/10.22460/infinity.v13i1.p61-82

Galdames-Calderón, M., Pedersen, A. S., & Rodríguez-Gómez, D. (2024). Systematic review: Revisiting challenge-based learning teaching practices in higher education. *Education Sciences, 14*(9), Article 1008. https://doi.org/10.3390/educsci14091008

Isminingsih, Faradiba, S. S., Setiawan, Y. E., Walida, S. El, & Damayanti, N. W. (2025). Analysis of mathematical reasoning ability through social emotional learning on cylinder. *AIP Conference Proceedings*, *3316*(1), 110015. https://doi.org/10.1063/5.0290432

Jacobs, A. M., Büthe, T., Arjona, A., Arriola, L. R., Bellin, E., Bennett, A., … Yashar, D. J. (2021). The Qualitative Transparency Deliberations: Insights and Implications. Perspectives on Politics, 19(1), 171–208. doi:10.1017/S1537592720001164

Maghfiroh, K. S., Sholekah, I., Lathifah, H., Istiqomah, F. N., Parnata, I., Sunaifah, I., & Badriyah, L. (2026). Connecting beliefs, identity, and attitudes to practice: a systematic review of pre-service mathematics teachers. Journal of Philosophy and Research in Islamic

Mathematics Education (J-PRIMa), 2(1), 50–62. https://doi.org/10.33474/j-prima.v2i1.25367

Maliana, R., Faradiba, S. S., Alifiani, & Dearamae, R. (2025). Expectations versus reality: A case study of metacognitive blindness in mathematics problems. *AIP Conference Proceedings*, *3316*(1), 110004. https://doi.org/10.1063/5.0290041

Muthukrishnan, P., Lan, L. F., & Anandhan, H. (2024). The role of growth mindset on the relationships between students' perceptions of English language teachers' feedback and their ESL learning performance. *Education Sciences, 14*(10), Article 1073. https://doi.org/10.3390/educsci14101073

Pamungkas, A. A. N. S., Muslim, S., & Djatmiko, W. (2024). Personal teaching philosophy calon guru sekolah dasar: Antara teori dan praktik. *Primary: Jurnal Keilmuan dan Kependidikan Dasar, 16*(2), 105–118. https://doi.org/10.32678/primary.v16i2.10768

Zubaidah, S. (2017). Keterampilan abad ke-21: Keterampilan yang diajarkan melalui pembelajaran. *Seminar Nasional Pendidikan*, 1–17

Raharja, B. J., & Ghozali, I. (2021). Discourse analysis on teacher-students interaction pattern of English teaching learning process. *Journal of Applied Linguistics, Translation, and Literature*, *1*(1), 1–6. https://doi.org/10.33292/jalintrali.v1i1.53

Reeve, J., & Hyeon, S. (2024). Learning how to become an autonomy-supportive teacher begins with perspective taking: A randomized control trial and model test. *Teaching and Teacher Education*, *148*(July), 104702. https://doi.org/10.1016/j.tate.2024.104702

Sugiyono. (2019). Metode Penelitian Kualitatif, Kuantitatif, dan R&D. Bandung: Alfabeta.

Sun, K. L. (2019). The mindset disconnect in mathematics teaching: A qualitative analysis of classroom instruction. *The Journal of Mathematical Behavior, 55*, 100706. https://doi.org/10.1016/j.jmathb.2019.04.005

Tulis, M., Steuer, G., & Dresel, M. (2016). Learning from errors: A model of individual processes. *Frontline Learning Research, 4*(2), 12–26. https://doi.org/10.14786/flr.v4i2.168

Wahidah, F. R. N., Anjarani, S., & Pranita, N. (2022). Growth mindset guru: Studi efektivitas pelatihan menumbuhkan growth mindset pada guru. *Indonesian Psychological Research, 4*(2), 78–84. https://doi.org/10.29080/ipr.v4i2.755

Wulandari, D., Suharyati, H., Novita, L., Apriyani, K., & Kunci, K. (2024). Peningkatan kualitas layanan berbasis growth mindset pada guru PAUD. *Journal of Dedicators Community, 8*(3), 243–262. https://doi.org/10.34001/jdc.v8i3.6302

Yeager, D. S., Hanselman, P., Walton, G. M., Murray, J. S., Crosnoe, R., Muller, C., ... Dweck, C. S. (2019). A national experiment reveals where a growth mindset improves achievement. *Nature, 573*(7774), 364–369. https://doi.org/10.1038/s41586-019-1466-y

Young, J.R., Sanders, M., Bevan, D., & Amin, S. (2025). What exactly is the productive struggle? Lessons learned from a content analysis of the mathematics education literature. International Journal of Education in Mathematics, Science, and Technology (IJEMST), 13(5), 1040-1063. https://doi.org/10.46328/ijemst.5696

Yulianti, M. D. ., Astawan, I. G. ., & Riastini, P. N. . (2024). The Relationship of the Teachers' Growth Mindset to the Students'Mutual Cooperation Character in Primary School. Indonesian Values and Character Education Journal, 7(1), 45–55. https://doi.org/10.23887/ivcej.v7i1.76209

Zhang, K. (2024). Does teachers' self-reported growth mindset ensure growth mindset-oriented feedback practices in the classroom? *Frontiers in Education, 9*, 1471518. https://doi.org/10.3389/feduc.2024.1471518