

# TEACHER IDENTITY IN TRANSITION: A GROWTH MINDSET PERSPECTIVE FROM PRE-SERVICE MATHEMATICS TEACHING PRACTICE

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## ABSTRACT

*This study explores how teacher identity is constructed and enacted through a growth mindset perspective in a pre-service mathematics teacher. Recognizing that teacher identity is dynamic and continuously shaped through classroom practice, this research investigates how growth-oriented beliefs are reflected in instructional discourse and classroom interactions during teaching practicum. A qualitative case study design was employed, focusing on a pre-service mathematics teacher conducting a teaching practicum at State Senior High School 3 Malang. Data were collected through classroom teaching transcripts derived from recorded lessons on compound interest and analyzed using discourse analysis to identify patterns related to growth mindset and teacher identity construction. The findings reveal that the teacher demonstrated an emerging growth mindset through encouraging effort, valuing learning processes, normalizing mistakes, supporting student agency, and promoting persistence in solving mathematical problems. These practices positioned the teacher as a motivator and facilitator who encouraged student participation and confidence. However, the teacher also frequently adopted authoritative and evaluative roles, particularly when emphasizing procedural accuracy and providing direct instruction. This reflects a tension between fostering student-centered learning and maintaining correct mathematical understanding in classroom practice. Overall, the study highlights that teacher identity is constructed as a hybrid and transitional process in which growth mindset beliefs coexist with traditional instructional approaches. The novelty of this study lies in its focus on the enactment of growth mindset through observable classroom discourse rather than relying solely on self-reported beliefs. The findings contribute to mathematics teacher education by providing empirical insight into how pre-service teachers negotiate professional identity and translate growth mindset principles into authentic instructional practices.*

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## INTRODUCTION

Teacher identity has increasingly been recognized as a central construct in understanding how pre-service teachers develop their professional practices, beliefs, and instructional decisions. Rather than being a fixed attribute, teacher identity is continuously constructed through interactions, experiences, and reflections during teaching practice (Torres-Cladera et al., 2021). Within this developmental process, the concept of a growth mindset, defined as the belief that abilities can be developed through effort, strategies, and feedback, plays a crucial role in shaping how teachers perceive themselves and their students in the learning process (Cabanela et al., 2025).

In mathematics education, where students frequently experience anxiety and fixed beliefs about their abilities, the role of the teacher extends beyond delivering content to shaping learners' dispositions toward learning (Ismorningsih et al., 2025). Teachers who demonstrate a growth mindset orientation tend to emphasize effort, encourage persistence, and frame errors as productive learning opportunities (Hasibuan, 2025). This orientation influences not only classroom practices but also how teachers position themselves, as facilitators of understanding rather than mere transmitters of knowledge.

For pre-service teachers, developing such an identity is often complex and non-linear. During teaching practice, they must navigate competing expectations, including managing classroom procedures, delivering accurate content, and engaging students in meaningful learning (Faradiba et al., 2024). As a result, their instructional practices may reflect a tension between traditional, teacher-centered approaches and more student-centered, growth-oriented pedagogies. These tensions are particularly visible in mathematics classrooms, where procedural fluency is often prioritized over conceptual understanding (Tuazon, 2025).

Classroom interactions provide a critical lens for examining how teacher identity is enacted in practice. Through instructional language, task design, and responses to student thinking, pre-service teachers reveal their implicit beliefs about learning and their roles as educators (Arenas-Peñaloza et al., 2025). Encouraging statements, opportunities for discussion, and responses to errors can indicate an emerging growth mindset orientation, while directive instruction and emphasis on correctness may reflect more fixed or performance-oriented perspectives (Maliana et al., 2025). Importantly, these practices do not exist in isolation but are intertwined, highlighting the dynamic and evolving nature of teacher identity.

In addition, the increasing use of instructional media and technology introduces new dimensions to teacher identity. Pre-service teachers are expected to integrate innovative tools while maintaining pedagogical coherence (Mitiche, 2025). This requires them to negotiate not only what it means to teach mathematics effectively but also how to position themselves as adaptive and reflective practitioners in contemporary classrooms. Despite the growing emphasis on growth mindset in teacher education, there remains limited understanding of how these beliefs are enacted in real classroom settings, particularly among pre-service teachers. Much of the existing literature focuses on self-reported beliefs rather than observable teaching practices, leaving a gap in understanding how teacher identity and growth mindset intersect in authentic instructional contexts (Samantray et al., 2024).

However, previous studies on teacher identity and growth mindset in mathematics education mainly focus on self-reported beliefs, teacher efficacy, or generalized perceptions of instructional practices rather than examining how these beliefs are enacted through authentic classroom interactions during teaching practice (Yang et al., 2020; Fu & Kartal, 2023; Schmitz et al., 2026). In addition, existing studies frequently investigate in-service teachers or explore growth mindset as an isolated psychological construct, leaving limited research that specifically examines the intersection between teacher identity construction and growth mindset enactment among pre-service mathematics teachers in real classroom settings (Lutovac, 2020; Mitiche, 2024; Sun, 2019). Furthermore, although several studies acknowledge that classroom discourse and responses to students' errors reflect teachers' beliefs, few studies have explored how these

practices simultaneously represent the ongoing negotiation of professional identity during mathematics teaching practice (Sun, 2019; Lusiana et al., 2025).

Therefore, the novelty of this study lies in its focus on examining teacher identity through a growth mindset perspective within authentic pre-service mathematics teaching practice. Unlike prior studies that primarily rely on surveys or self-perception measures, this study emphasizes observable classroom discourse, instructional interactions, and responses to student thinking as indicators of identity construction and growth-oriented teaching practices. By integrating teacher identity and growth mindset within actual classroom contexts, this study contributes a more practice-based understanding of how pre-service mathematics teachers negotiate their professional roles and pedagogical beliefs during teaching practice.

Therefore, this study aims to explore how teacher identity is constructed and expressed through a growth mindset lens in a pre-service mathematics classroom. By focusing on classroom discourse and instructional practices, this research seeks to provide deeper insights into the ways pre-service teachers negotiate their roles, respond to student learning, and enact growth-oriented teaching in practice.

## **METHOD**

### **Research Design**

This study employed a qualitative case study design to explore how teacher identity is constructed and enacted through a growth mindset lens in a pre-service mathematics classroom. A qualitative approach was chosen to capture the complexity of classroom interactions, instructional decisions, and the meanings embedded in teacher–student discourse. The study focused on a single case to allow an in-depth analysis of the dynamic and context-dependent nature of teacher identity (Bardach et al., 2024).

### **Participant and Context**

The participant in this study was a pre-service mathematics teacher conducting a teaching practicum in a secondary school classroom at SMAN 3 Malang. The research was conducted from February to March 2026. The lesson observed focused on compound interest, particularly on the effect of parameters such as interest rate, time period, and compounding frequency. The classroom consisted of students working collaboratively in groups, engaging in problem-based learning activities guided by the teacher.

### **Data Collection**

The primary data source was a classroom teaching transcript derived from a recorded lesson. The transcript captured verbal interactions between the teacher and students throughout the learning process, including instruction, questioning, feedback, and classroom management. The data were transcribed verbatim to preserve the authenticity of classroom discourse. To support the analysis, the transcript included time markers and detailed records of teacher–student exchanges, allowing for careful examination of how instructional language reflects underlying beliefs and identity positioning (Marcial & Santos, 2025).

### **Data Analysis**

Data were analyzed using discourse analysis with a focus on identifying how teacher identity and growth mindset were enacted through language and interaction. The analysis followed three stages:

1. **Data Familiarization**

The transcript was read multiple times to gain a holistic understanding of the classroom interaction and to identify significant episodes related to teaching practices and student engagement.

2. **Coding and Categorization**

The coding process involved both deductive and inductive approaches. Deductive codes were derived from theoretical constructs of growth mindset and teacher identity, while inductive codes emerged from recurring patterns in the classroom discourse. A coding scheme was developed to categorize teacher’s utterances and actions based on indicators such as encouragement of effort, normalization of mistakes, directive instruction, and facilitative questioning (see Table 1).

**Table 1. Coding Scheme for Growth Mindset**

Sub-Category	Indicator	Operational Definition	Transcript
Encouragement of Effort	Verbal encouragement	Teacher motivates students to try, persist, or believe in their ability	“You can definitely do it.”
	Positive reinforcement	Teacher affirms students’ attempts regardless of correctness	“Yes, that’s correct.”
Valuing Process	Emphasis on process over result	Teacher highlights understanding and steps rather than final answers	“What matters is that you understand the process.”
	Allowing revision	Teacher allows mistakes and encourages correction	“If it’s wrong, don’t use correction fluid just cross it out.”
Normalizing Mistakes	Error acceptance	Teacher treats mistakes as natural in learning	“It’s okay.”
	Constructive response to error	Teacher uses errors as learning opportunities	“I’ll explain it later.”
Student Agency	Encouraging independent thinking	Teacher prompts students to think or decide independently	“Which one are you going to choose?”
	Use of open-ended questions	Teacher asks questions that require reasoning	“Why do the units have to be the same?”
Challenge Orientation	Promoting challenge	Teacher encourages students to engage with difficult tasks	“Please discuss it.”
	Time pressure as motivation	Teacher sets time to push engagement	“12 minutes left.”

While Table 1 outlines the indicators of growth mindset reflected in the teacher’s instructional practices, these indicators cannot be fully understood without considering the broader construction of teacher identity in classroom interaction. Growth mindset is not enacted in isolation; rather, it is embedded within the roles the teacher assumes during instruction, such as facilitator, authority, motivator, and evaluator. Therefore, to capture the complexity of how beliefs are translated into practice, Table 2 presents the coding scheme for teacher identity. This complementary framework enables a more comprehensive analysis of how the teacher negotiates and positions herself in relation to students, instructional goals, and classroom dynamics.

**Table 2. Coding Scheme for Teacher Identity**

Sub-Category	Indicator	Operational Definition	Example from Transcript
Authority	Directive instruction	Teacher gives explicit procedural steps	“divide by 12... raise it to the 12th power.”
	Controlling classroom	Teacher manages behavior and structure	“Phones in first, please—yes, I’m serious.”
Facilitator	Guiding questions	Teacher scaffolds understanding through prompts	“So... do the units need to match or not?”
	Supporting discussion	Teacher encourages group work	“Go ahead, form your squads.”
Motivator	Emotional support	Teacher builds students’ confidence	“Keep the energy up!” / “You got this!”

	Positive classroom climate	Teacher creates supportive atmosphere	informal tone, humor
Evaluator	Checking correctness	Teacher verifies answers	“Yep, that’s right!”
	Prompting justification	Teacher asks for reasoning	“Which one’s bigger?”
Adaptive Practitioner	Use of learning media	Teacher integrates tools/resources	“using AI-based comics”
	Flexibility in teaching	Teacher adjusts to classroom conditions	“working around the LCD issues”
Knowledge Authority	Explaining concepts	Teacher provides formal explanations	“explaining compound interest”
	Correcting misconceptions	Teacher clarifies errors	“correcting students’ calculations”

### 3. Interpretation

The coded data were interpreted to examine how different aspects of teacher identity were constructed and negotiated in practice. Particular attention was given to tensions or shifts between growth-oriented and more traditional instructional approaches, as reflected in classroom discourse. To ensure the credibility of the findings, the analysis involved iterative reading and constant comparison of data segments. Interpretations were grounded in direct excerpts from the transcript to maintain transparency and reduce researcher bias. In addition, peer discussion was conducted to review coding decisions and strengthen the consistency of interpretations (Yu et al., 2022).

## RESULTS AND DISCUSSION

The findings indicate that the pre-service teacher’s identity is constructed through a dynamic interplay between growth mindset-oriented practices and traditional instructional roles. Observation data showed that the teacher consistently used motivational language during mathematics instruction, such as the expressions “Pasti bisa” and “semangat” when students experienced difficulties in solving mathematical problems. The use of these expressions reflects the teacher’s effort to build students’ confidence and persistence throughout the learning process.

These findings suggest that the pre-service teacher positioned herself as a motivator who encouraged students to remain engaged in challenging mathematical tasks. The use of positive language and verbal encouragement reflects characteristics of growth mindset-oriented instruction, which emphasizes effort and the development of students’ abilities. This finding is consistent with (Bardach et al., 2024), who explained that teachers with a growth mindset orientation tend to create supportive learning environments and increase student engagement in mathematics learning. In addition, verbal encouragement in mathematics classrooms can help reduce students’ mathematics anxiety and improve classroom participation (Dong et al., 2023).

The findings also revealed that the teacher emphasized learning processes rather than focusing solely on final answers. This was reflected in statements such as “yang penting prosesnya kalian sudah mengerti” when students solved mathematics problems. Furthermore, the teacher asked students to cross out incorrect answers instead of erasing them so that students’ thinking processes remained visible during instruction.

These findings indicate the implementation of growth mindset pedagogy in mathematics learning, where mistakes are viewed as part of the learning process rather than as a form of failure. Allowing the correction process to remain visible helps students understand that mathematics learning involves thinking processes, revision, and gradual evaluation. This finding is in line with van (Hoeve et al., 2025), who stated that classroom environments that provide space for mistakes can increase students’ willingness to explore mathematical problem-solving strategies. Moreover, teachers’ responses to students’ errors also contribute to the

development of students' conceptual understanding and mathematical thinking flexibility (Morales-Navarro et al., 2024).

Overall, the findings show that the instructional practices enacted by the pre-service teacher reflect an evolving identity between the roles of motivator and learning facilitator. The use of motivational language and emphasis on learning processes indicate that the pre-service teacher attempted to create a learning environment that supports students' development. These findings support (Mitiche, 2024), who argued that teacher identity develops dynamically through teaching practice experiences and pedagogical interactions occurring in classroom settings.

Based on observational data, teachers employ growth-oriented practices while simultaneously adopting an authoritative role in mathematics instruction. This authoritative role is clearly evident when teachers provide explicit procedural instructions, such as directly instructing students to divide interest rates by twelve or adjust exponents based on units of time. This duality in the teacher's role is also reflected in their classroom questioning strategies. On one hand, teachers pose guiding questions such as "*kira-kira satuannya harus sama atau tidak?*" to stimulate students' reasoning. However, on the other hand, such interactions are often immediately followed by confirmation or instant correction from the teacher, which shifts the classroom dynamic back toward an evaluative direction. Furthermore, when encountering student errors during presentations, the teacher responds with affirmative statements such as "*tidak apa-apa*" and emphasizes the importance of understanding the process. Nevertheless, at the same time, the teacher still intervenes directly to correct the students' final answers on the whiteboard.

These findings indicate a clear tension between facilitating student-centered learning and maintaining control over procedural accuracy. The dominance of explicit instruction in guiding procedural understanding positions the teacher as the primary authority on knowledge (Arnesen & Rø, 2024). Although this guided instruction is crucial in mathematics to prevent misconceptions, excessive dominance risks limiting the space for students to construct their understanding independently (Matthews, 2024). This phenomenon aligns with the reality in the field, where curriculum pressures and heavy content loads often force mathematics teachers to revert to traditional, mechanistic approaches for the sake of time efficiency, even though they hold a constructivist pedagogical orientation.

The questioning strategies used by teachers also reinforce this duality. The guiding questions posed by teachers actually have great potential to support student agency and promote inquiry-based learning (Gombo, 2025). However, the tendency of teachers to immediately provide confirmation or correction after a question is asked indicates that the focus of learning remains heavily oriented toward the correctness of the final result and time efficiency. In the context of mathematics pedagogy, the failure to provide sufficient teacher wait-time can deprive students of the opportunity to engage in deep thinking processes (*productive struggle*).

Finally, the teacher's warm response to students' mistakes through the phrase "*tidak apa-apa*" reflects the adoption of a growth mindset that normalizes mistakes as part of the learning process (Kroeper et al., 2022). However, the teacher's simultaneous action of directly intervening in the final answer indicates that practices in the field remain strongly tied to a performance-oriented culture. This coexistence of growth-oriented beliefs and outcome-oriented practices underscores the complexity of the formation of mathematics teachers' professional identities. This misalignment is generally triggered by a professional dilemma between the demands of formal exams, which emphasize the accuracy of the product, and pedagogical idealism, which emphasizes the beauty of the process.

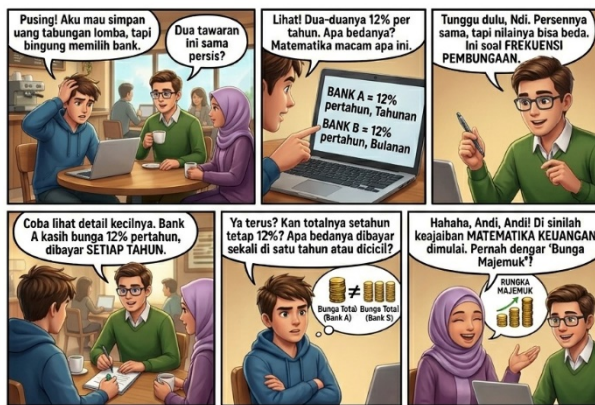


Figure 1. Comic Part One



Figure 2. Comic Part Two

Figure 1 and Figure 2 are comics used by teachers to spark students' understanding of the parameters of compound interest. The comics do not explicitly explain the difference in the frequency of interest accrual between Bank A and Bank B, but they do explain the process. Prospective teachers creatively use comics as a medium to stimulate understanding without relying on lectures, thereby making learning student-centered—more meaningful and enjoyable. This demonstrates that prospective teachers possess a growth mindset, as they provide students with the space to construct knowledge independently through exploration and critical thinking, rather than merely passively receiving information (Tan et al., 2024). This approach indicates that the teacher views students' abilities as capable of developing through effort, learning experiences, and active engagement in learning—key characteristics of a growth mindset (Dweck, 2017). Furthermore, student-centered learning using contextual visual media can enhance students' motivation, engagement, and conceptual understanding in mathematics learning (Kusumadewi et al., 2026). In addition, the use of instructional media, such as AI-generated comics, reflects an adaptive dimension of teacher identity. The teacher's emphasis on students' independent thinking, rather than the tool itself, suggests an awareness of pedagogical purpose in integrating technology. This indicates the emergence of an adaptive practitioner identity that is responsive to contemporary educational contexts (Weng, 2025). However, the limited elaboration on how such media support conceptual understanding suggests that this aspect of identity is still developing.

Prospective teacher students act as motivators, as demonstrated by phrases like “Keep the energy up!” and “You’ve got this!”. Additionally, they act as facilitators, as shown by “So... do the units need to match or not?” and as evaluators, as shown by “Yep, that’s right!”. This indicates the presence of a growth mindset in teachers, as they provide emotional support, encourage students' courage to try, and give students the opportunity to think and find answers independently. Teachers with a growth mindset tend to value the learning process, effort, and development of students' abilities rather than focusing solely on the final outcome (Rissanen et al., 2021). Furthermore, posing prompting questions and providing positive feedback can enhance students' self-confidence and engagement in the mathematics learning process (Barana et al., 2021; Mahmud et al., 2021; Stovner & Klette, 2022). However, on the other hand, some teachers adopt an authoritarian approach, immediately providing explanations to students without offering prompts or assistance to encourage students to think first. This reflects a fixed mindset among teachers, as they remain focused on direct information transfer and assume that understanding is gained through the teacher's explanation rather than through students' exploratory processes. Overly directive teaching practices can limit students' opportunities to develop critical thinking skills and deep conceptual understanding (Sun, 2021). Additionally, teachers with a fixed mindset typically focus more on correct answers and learning efficiency rather than the students' thinking process (Lou & Noels, 2020).

Overall, the findings reveal that the pre-service teacher enacts a hybrid identity that integrates roles as a motivator, facilitator, authority, and evaluator. This hybridity reflects the transitional nature of pre-service teacher development, in which growth mindset beliefs are present but not yet consistently enacted in practice (Ucar & Akbaş, 2025). The coexistence of supportive discourse and directive instruction highlights the influence of both pedagogical ideals and contextual classroom demands. This may occur among pre-service teachers because they are still in the process of developing their professional identity, often leading to a tension between their ideal pedagogical beliefs and the realities of classroom teaching. Their limited teaching experience also causes pre-service teachers to tend to revert to a directive approach to ensure effective learning (Dube et al., 2023). Additionally, the pressures of classroom management and the demands of achieving learning objectives can affect the consistency of applying a growth mindset in teaching practice (Rissanen et al., 2021).

These findings underscore that the enactment of a growth mindset in teaching extends beyond beliefs and involves complex negotiation within classroom practice. Teacher identity plays a critical role in mediating how growth mindset principles are translated into instructional actions (Laine & Tirri, 2023). Therefore, teacher education programs should not only emphasize growth mindset at a conceptual level but also provide opportunities for pre-service teachers to critically reflect on and align their practices with these principles. Reflection on teaching experiences, the use of learning strategies, and interactions with students is essential to help teachers develop a professional identity that is more consistent with the principles of a growth mindset. Reflective experiences and authentic teaching practices have been shown to help pre-service teachers develop pedagogical awareness, critical reflection skills, and consistency in applying a growth mindset to learning (Ergan, 2025; Li, 2025)

## CONCLUSION

This study highlights that teacher identity in a pre-service mathematics classroom is constructed through a dynamic and ongoing negotiation between growth mindset-oriented beliefs and traditional instructional practices. The findings show that the pre-service teacher demonstrates an emerging commitment to growth mindset principles, particularly through encouraging language, valuing learning processes, and normalizing mistakes. These practices reflect an identity as a motivator and facilitator who seeks to support students' engagement and confidence in learning mathematics.

However, the study also reveals that this growth-oriented identity is not yet consistently enacted. The teacher simultaneously adopts authoritative and evaluative roles, especially when emphasizing procedural accuracy and providing direct instruction. This coexistence indicates that pre-service teachers often experience tension between fostering student-centered learning and ensuring correct mathematical understanding. As a result, teacher identity appears as a hybrid and transitional construct shaped by both pedagogical beliefs and contextual classroom demands.

These findings suggest that developing a growth mindset in teaching requires more than conceptual understanding; it involves the alignment of beliefs, instructional practices, and classroom interactions. Teacher education programs, therefore, play a crucial role in supporting pre-service teachers to critically reflect on their teaching practices and to consciously integrate growth mindset principles into their instructional decisions.

Future research may explore multiple cases or longitudinal designs to better understand how teacher identity evolves over time and across different teaching contexts. Additionally, incorporating reflective practices and mentoring in teacher education may help bridge the gap between espoused beliefs and enacted practices.F

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