A Scoping Review of Research on Factors Influencing Pre-Service Teachers' Teacher Identity

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Abstract
This study provides a review of 30 studies to identify factors influencing pre-service teachers' teacher identity. These studies were published in English-written, peer-reviewed articles from 2003 to 2023 mainly in three electronic databases: Web of Science, Scopus, and ScienceDirect. After a qualitative analysis of the data, factors influencing pre-service teachers' teacher identity were classified into four main types, namely prior experience and learning, personal characteristics, context and learning communities. It helps teacher educators understand the formation of pre-service teachers' identities and the factors influencing it. Additionally, it provides insights for educators and pre-service teachers on the importance of teacher identity development and its influencing factors. However, many studies appear to follow the same trend of highlighting positive outcomes, ignoring negative results, and minimizing difficulties in examining pre-service teachers' perceptions of identity as teachers. The review study indicates that teacher education programs should consider both the positives and negatives of influencing factors in nurturing teacher identity of pre-service teachers.
Keywords: Pre-service Teachers, Teacher Identity, Influencing Factors, Review Study, Teacher Education Program.

Introduction
Research in education and teacher training emphasizes the significance of teacher identity (Beauchamp & Thomas, 2009; Beijaard et al., 2004). It indicates that a robust and enduring teacher identity is favourably correlated with both emotional health (Zembylas, 2013) and the instructional quality within classrooms (Agee, 2004; Beijaard, 2002). Moreover, teachers' confidence in their career decision and level of commitment to the teaching profession can both be strengthened by a high level of professional identity (Rots et al., 2010).

In light of the significance of teacher identity, numerous investigations have been done on teacher education to understand how teacher identity is formed and developed. There have been reviews analyzing the professional identity of university teachers (Lankveld et al., 2017), experienced teachers (Carrillo & Flores, 2018), teacher mentors (Izadinia, 2014; Swennen et al., 2010), and science educators (Zhai et al., 2024). However, there has been no review specifically addressing the factors that impact teacher identity of pre-service teachers. This gap exists despite the existence of some reviews on teachers' teacher identity, such as overviews of frameworks (Ahmad et al., 2019), reviews of quantitative measurements (Hanna et al., 2019), and thorough analyses of studies' key findings and contributions (Izadinia, 2013; Rodrigues & Mogarro, 2019).

The primary aim of this review was to examine studies on factors influencing pre-service teachers' teacher identity. By analysing the content and influencing factors of 30 studies, the review seeks to identify the differences and similarities in the existing literature. Firstly, it is believed that the critical overview of these influencing factors will aid teacher educators in better understanding how pre-service teachers' teacher identity is formed during teacher education programs and what factors influencing their teacher identity positively or negatively. Bullough (1997), emphasized that teacher identity is crucial to teacher education, serving as the foundation for meaning-making and decision-making. Secondly, the review aims to provide assistance to educators and pre-service teachers in building their teacher identity by providing insights into the importance of teacher identity construction and the factors that influence its development.

Method
A scoping review of pre-service teachers' teacher identity was conducted to identify factors influencing teacher identity and summarize implications and suggestions made by these studies for teacher education, teacher educators and future research. This scoping review adhered to the five-stage framework developed by Arksey and O'Malley (2005), along with the guidelines for scoping literature reviews provided by (Levac et al 2010; and Peters et al., 2020). The process involved five steps: formulating research questions, identifying relevant studies, selecting studies, charting the data and analyzing the data.

Step 1: Formulating research questions. This scoping review is guided by two main questions:
1. What factors influence pre-service teachers' teacher identity?
2. What implications and suggestions do these researches provide for teacher education, teacher educators, and future research?

Step 2: Identifying relevant studies. Databases were selected from some of the most recognized and highly regarded journals in the fields of education and teacher education to identify articles on teachers' teacher identity using keywords. To focus the search on factors influencing teacher identity, keywords were created using the PCC (P—Population or participants; C—Concept; C—Context) framework, which was developed from the research questions. The PCC framework was proposed by Pollock et al. (2023) as a tool for formulating precise, significant goals and qualifying standards for a scoping review. The pre-service teachers in this review were classified as P (Population), C (Concept) was teacher identity, and C (Context) was influencing factors. Table 1 displays the combination of keywords using the Boolean operators OR and AND.

Table 1
Key search terms

	PCC elements	Search items
And	P- Pre-service teachers	Pre-service teachers OR Student teachers
	C- Teacher identity	Teacher identity OR Teacher identities OR Teachers' professional identity
	C- Influencing factors	Influencing factors OR Impacting factors OR Influencing elements OR Impacting elements

Multiple criteria were applied to the inclusion and exclusion of literature in order to focus the review's scope (refer to Table 2). The publications that were chosen for inclusion have to center on the factors that influencing preservice or in-service teachers' professional identities. Additional requirements were full-text empirical research papers published in peer-reviewed publications in English, with publication dates ranging from January 2003 to December 2023. Three internet databases were searched: Web of Science (WOS), Science Direct, and Scoups.

Table 2
Inclusion and exclusion criteria

Criteria	Inclusion	Exclusion
Population	Articles centered on pre-service teachers at different stages	Articles that centered on in-service teachers
Concept	Empirical studies primarily concentrated on teacher identity.	Articles that addressed topics apart from teacher identity (i.e., agency, self-efficacy, commitment, burnout)
Context	Articles concentrating on influencing factors, including terms such as impacting factors, factors influence, shape, impact	Articles that focused on aspects of professional identity other than influencing factors
Time	January 2003 to December 2023	Articles published other than the period of January 2003 to December 2023
Publication type	Full-text empirical research studies published in peer-reviewed journals	Not empirical research studies; books and book chapters; reviews; dissertations, conference proceedings, etc.
language	English	Other languages

Step 3: Selecting studies. Between January 2003 and December 2023, the exploration yielded 1168 studies. Upon screening the abstracts according to inclusion and exclusion criteria, 1137 studies were removed. Reasons for exclusion included a lack of exclusive focus on teachers' professional identity and failure to analyze factors influencing it. The study intentionally disregarded related concepts from psychology like vocational or occupational identity. The search predominantly targeted studies published in reputable journals, acknowledging the possibility of other relevant articles. It is acknowledged of the potential contributions of

unpublished works and other published formats but excluded. Using these criteria, the study narrowed the total number of articles to 30. Figure 1 shows an overview of this selection process. Nonetheless, this review offers a substantial synthesis of research on teacher identity within teacher education, featured in prominent journals over the past two decades, significantly enriching the field's knowledge.

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│      Identifying studies    │                    │                 │
│  Web of Science (N=378)     │ ─────────────────▶ │  1168 studies   │
│  Science Direct (N=436)     │                    │                 │
│  Scoups (N=354)             │                    │                 │
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                               ┌───────────────────────────────────────────┐
                               │       Screening titles and abstracts      │
                               │  Not focus on teacher identity (N=620)    │
              ┌─────────────┐  │  Not focus on influencing factors (N=470) │
              │ 40 studies  │◀─│          Review (N=11)                    │
              └─────────────┘  │      Conference paper (N=21)              │
                     │         │          Language (N=4)                   │
                     │         │          Not found (N=2)                  │
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      │ Screening full texts │                    │  Included in review │
      │        N=30          │ ─────────────────▶ │      30 studies     │
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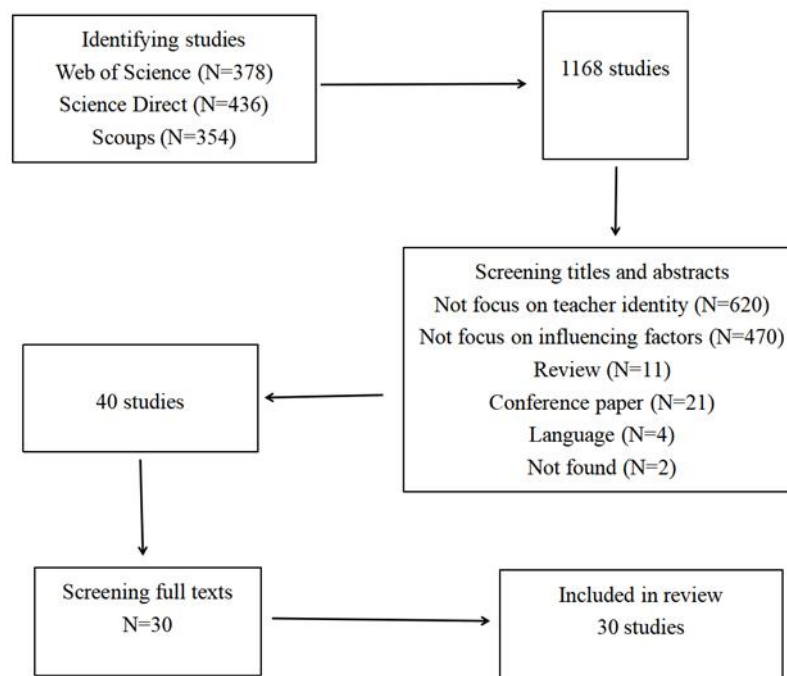
Figure 1 Flowchart of the selection process

Step 4: Charting the data. Two authors worked together to create an Excel data-charting form that helped researchers decide which content to retrieve from the studies. From published studies, the data-charting form collected the following pertinent information: Basic study information includes (a) authors, year of publication, and country of study; (b) participant characteristics include teachers' grade level, major, subject, and gender; (c) factors influencing teacher identity; (d) research methods used in the study; and (f) major research findings and implications and suggestions made by these studies.

Step 5: Analyzing the data. The review was conducted with a qualitative analysis on the data, following a three-step process as outlined by Izadinia (2013) and Van Lankveld et al. (2017). Initially, the primary author thoroughly reviewed the full texts to grasp the essence of the studies and their methodologies. Subsequently, relevant sections pertaining to our study's focus, particularly the factors influencing teacher identity, were revisited and summarized. These summaries were subsequently discussed among the authors until a consensus was reached on abstracts, resulting in the exclusion of nine studies that did not effectively identify influencing factors on teacher identity. Detailed results will be discussed in the next section.

Results
In this scoping review, factors influencing pre-service teachers' teacher identity were classified into four main types, namely prior experience and learning, personal characteristics, context and learning communities.

Prior Experience and Learning

The importance of prior experience and learning on pre-service teachers' developing their teacher identities is highlighted in eight studies. Teacher education programs should acknowledge that pre-service teachers' values, beliefs, and prior knowledge and experience contribute significantly to the formation of their classroom practices and teacher identity. Table 3 illustrates the significance of prior knowledge and experience in shaping pre-service teachers' teacher identity.

Table 3

Studies on prior knowledge and experience influencing pre-service teachers' teacher identity

NO.	Author, year and context	Method and data collection instruments	Key findings
1	Akyeampong and Stephens (2003) Ghana	Mixed (Questionnaire, Autobiography, Interview)	When they enter training, pre-service teachers have a diverse and expansive perception of the teaching profession.
2	Olsen (2008) USA	Qualitative (Interview, Teaching artifacts, Documents analysis)	Previous encounters and occurrences with the kind of teacher that led to the decision to enter the teaching profession.
3	Andersson and Hellberg (2009) Sweden	Qualitative (Semi-structured interviews)	In teacher education programs, prior experiences and learning were implicitly and indirectly acknowledged.
4	Cook (2009) USA	Qualitative (Semi-structured interviews)	In the study teachers were able to identify dissonant areas and how they explained them by thinking back on their experiences.
5	Daly (2009) New Zealand	Qualitative (Semi-structured interviews)	Between before and right after the Language Teacher Education (ALTE) paper was finished, pre-service teachers' ideas regarding the role of an additional language teacher changed dramatically.
6	Chang-Kredl & Kingsley (2014) Canada	Qualitative (Narration, autobiographical writing)	The study found that memories of primary school were the most significant past school experiences. When it came to previous

			work experiences, the tasks that engaged children were the most treasured. There seemed to be more variation in the family area. A comparable proportion of pupils remembered all three of these elements: witnessing a sibling's experiences, tending to younger siblings or cousins, and seeing a parent's actions and encouragement.
7	Aykac (2017) Turkey	Quantitative (Questionnaire)	The researcher developed a scale (FAPTTI), including six factors, namely close social environment, education life before higher education, teaching experience, personal characteristics, features of the profession and media effect.
8	Kavrayici (2020)	Mixed (Questionnaires, Semi-structured interviews)	The elements that have a moderate impact on teacher identity include "teaching experience," "education life prior to higher education," and "features of the profession."

Chang-Kredl & Kingsley (2014) investigated pre-service teachers' recollections of past experiences and motivations for entering the teaching profession. Three categories of past experience—school, family, and work—rose from the memory fragments in the study. The study found that memories in primary school were the most impactful past school experiences. When it came to previous work experiences, the tasks that engaged children were the most treasured. There seemed to be more variation in the family area. A comparable proportion of pupils remembered all three of these elements: witnessing a sibling's experiences, tending to younger siblings or cousins, and seeing a parent's actions and encouragement. Olsen (2008), made a similar argument, saying that a teacher's reasons for going into the field are shaped by their experiences in the past and how they see themselves developing as educators. As a result, he argued that teacher educators should be able to assist student teachers in identifying their evolving teacher identities and comprehend the motivations behind their career decisions. Another recommendation along these ideas comes from Akyeampong and Stephens (2003), investigating the expectations, experiences, beliefs, and background traits of student teachers. They emphasized the importance of clearly recognizing and integrating student teachers' opinions about education and educators into

the training process. As a result, they contend, a more individualized understanding of teaching is fostered by greater reflection on instructional practices and professional knowledge.

Andersson and Hellberg (2009), interviewed student teachers to find out how their prior positions as babysitters affected their academic choices. Their investigation showed that these earlier encounters had a beneficial effect on how their identities were reshaped and how they were driven to become college students. Cook (2009), examined the real-world experiences of inexperienced English teachers by conducting interviews with them following their first year of teaching. Key themes identified in the interviews included the impact of previous teachers on the teachers' professional identities, the significance of setting boundaries with students, and the ability to remain resilient in the face of adversity. According to Cook, these encounters provide aspiring educators with worthwhile educational chances. Reflecting on their interactions, student teachers are better able to identify conflict areas, deal with the initial difficulties of teaching, and promote personal growth. This procedure is in line with the claims made by Aykac (2017), and Kavrayici (2020), that meaningful reflection on experiences rather than the events themselves is what leads to actual learning.

Personal Characteristics

According to Webster & Ward (2011), personality is a psychological construct that is by definition not directly observable, although it can be examined and inferred from visible behaviors. The interconnected and dynamic constructions of personality and teacher identity influence pre-service teachers' future careers (Ünaldı et al., 2023). The following five studies (Refer to table 4) highlights personal characteristics that influence teacher identity of pre-service teachers, two of them (Aykac et al., 2017; Kavrayici, 2020) were discussed in the previous part--Prior experience and learning.

The research indicates that personal characteristics greatly influenced pre-service teachers' teacher identity formation. Yasar et al (2013), conducted a survey among novice teachers and pre-service preschool teachers. According to the information gathered, it was determined that personal attributes play a significant role in shaping the way instructors perceive their identities. The outcomes are in line with those of (Aykac et al., 2017). As Kavrayici (2020), stressed that personal traits like a passion for teaching, a love of children, and other traits play a significant role in shaping and influencing a teacher's identity within the profession.

Buendía-Arias (2020), researched how preservice teachers develop their identities and the elements influencing their identity formation during a practicum course. Throughout the practicum, interactions between the pre-service teachers and the children's personalities were evident. Pre-service teachers demonstrated that some traits—like being outgoing, witty, extroverted, artistic, and compassionate—were advantageous and enhanced their capacity to foster relationships with students and increase their engagement in the classroom. Consequently, teacher preparation programs ought to be viewed as opportunities for preservice teachers to develop, refine, and potentially alter their personalities, ultimately laying the groundwork for their future professional identities (Ünaldı et al., 2023).

Table 4

Studies on personal characteristics influencing pre-service teachers' teacher identity

NO.	Author, year and context	Method and data collection instruments	Key findings
1	Yasar (2013) Turkey	Quantitative (Questionnaire)	A pre-service teacher's impression of their identity as a teacher is influenced by a number of elements, including their personal traits, motivation to learn, applications for internships, higher education, surroundings (mentors, peers, family), and the literature and movies they watch.
2	Aykac (2017) Turkey	Quantitative (Questionnaire)	The researcher adopted quantitative research method to develop a scale to investigate underlying factors influencing teacher identity, and personal characteristics is one of the important factors.
3	Kavrayici (2020) Turkey	Mixed (Questionnaires, Semi-structured interviews)	The findings of the study showed that student teachers' personal traits had a significant impact on their teacher identity. One may argue that personal traits like a passion for teaching, a love of children, and other traits play a significant role in shaping and influencing a teacher's identity within the profession.
4	Buendía-Arias (2020) Colombia	Qualitative (Case study)	It was clear throughout the practicum that the personality features of the kids and the pre-service instructors interacted. Certain qualities (such being gregarious, humorous, extroverted, artistic, and compassionate) were shown to be beneficial by pre-service instructors and improved their ability to build relationships with students as well as their participation in class.
5	Ünaldı (2023) Turkey	Mixed (Questionnaires,	Teacher education programs could be considered opportunities to assist student

		Semi-structured interviews)	teachers in constructing, refining, and potentially modifying their personalities, while eventually providing the foundation on which future teacher identities are constructed, given that personality development extends into the early twenties and personality is the foundation upon which teacher identity is built.

Context

Research indicates that interactions with people and surroundings help to shape one's professional identity (Beijaard et al., 2004; Korthagen, 2004). Additionally, activity theory suggests that social behaviors within contexts play a role in the development of human beings, including the building of teacher identity (Smagorinsky et al., 2004). Numerous research (refer to Table 4 below) examine how contextual circumstances impact teacher identity of pre-service teachers and highlight the significance of their contribution to the formation of teacher identity.

Table 5

Studies on context influencing pre-service teachers' teacher identity

NO.	Author, year and context	Method and data collection instruments	Key findings
1	Samuel and Stephens (2003) South Africa	Qualitative (Reflective written and oral accounts, observations, interviews)	There were conflicts between what people believed they could do as teachers and their personal goals and aspirations. In the same way, the pre-service teachers' early experiences shaped their identities as future educators.
2	Smagorinsky et al. (2004a) USA	Qualitative (Interviews, concept map activities, artefacts)	Because of tensions that impacted their identity as teachers, pre-service teachers' teaching experiences did not allow them to advance toward their associate teachers' aims or toward their own.
3	Larson and Phillips (2005a) USA	Qualitative (Interviews, reflective journals, observation)	Tensions between two powerful and opposing discourses gave rise to places of resistance and transformation.

4	Findlay (2006) UK	Qualitative (Interviews, narration)	Aspirations of pre-service teachers and the realities of classroom life were found to be at odds.
5	Flores and Day (2006) Portugal	Mixed (questionnaires, brief essays, semi-structured interviews)	The impact of the workplace, whether favorable or bad, was crucial in reshaping teachers' conceptions of teaching, promoting or impeding their professional development, and redefining their teacher identity.
6	Liu and Fisher (2006) UK	Mixed (Semi-structured interview, Questionnaire, self-reflection report)	It was noted that pre-service teachers' views of teacher identities and their classroom performance evolved over time.
7	Schepens et al. (2010) Belgium	Quantitative (Questionnaire)	Self-efficacy, dedication to teaching, and career orientation were the three product variables that were most closely predicted by personality factors and program motivation.
8	Lamote and Engels (2010) Belgium	Quantitative (Questionnaire)	A change resulted from pre-service teachers' practical classroom teaching experience: they became less concerned with the curriculum, more with keeping the classroom organized, less with achieving their long-term educational goals, and their self-efficacy declined.
9	Leshem (2012) Israel	Quantitative (Questionnaire)	Student teachers' professional growth was greatly aided by mentor teachers, who made significant contributions to pre-service teacher education.
10	Izadinia (2016) Australia	Qualitative (Interviews, observation)	A positive mentoring relationship between mentors and student teacher have an impact on the identity formation of student teachers.

11	Chen & Mensah (2018) USA	Qualitative (Case study)	The formation of preservice teachers' identities as teachers and scientists was shown to be mediated by their personal histories, university courses, placement in student teaching classrooms, and opportunities for authentic teaching.
12	Oliveira Leite et al. (2022) Finland	Quantitative (Questionnaire)	During their teacher education, pre-service teachers' teacher identities are dynamically impacted by numerous features of learning environment, coherence of the curriculum, and professional identity.

Research indicates that attitudes and perspectives toward various aspects of the teaching profession alter in both positive and negative ways as pre-service teachers gain teaching experience. Contextual elements have some effect over these changes. For instance, a three-year study conducted by Lamote and Engels (2010), examined changes in commitment to teaching, task orientation, self-efficacy, and career orientation. They discovered that significant progress had been made in a few of these areas. The researchers provide several explanations for these observed changes, such as the development of new values and beliefs, the discovery of new information about their skill set, and familiarity with the responsibilities of the profession.

Smagorinsky et al (2004b), and Larson and Phillips (2005a), delve into the ideological tensions between pre-service teachers' education programs and their teaching placements. Focusing on female pre-service teachers, these studies highlight shifts in their teacher identity across different educational contexts. For example, Smagorinsky et al (2004b), noted clashes involving constructivist principles taught in teacher programs and traditional methods in school placements. They found that the mimetic approach which characterized by emulating teachers' approaches and strict mentor guidance hindered pre-service teachers' growth, limiting their ability to apply acquired skills. Similarly, Larson and Phillip's (2005a), study noted tensions between scripted reading programs and university-promoted comprehensive instruction. Despite these tensions, both studies found that pre-service teachers developed resilience and agency, benefiting their professional growth.

In conjunction with these findings, Leshem (2012), emphasizes the crucial role of mentor teachers in pre-service teacher education, contributing significantly to their identity development. Izadinia (2016), highlights the impact of positive mentoring relationships on the formation of pre-service teachers' teacher identity. Moreover, Chen & Mensah (2018), and Oliveira Leite et al (2022), suggest that student teachers' identities are dynamically shaped by various aspects of the learning environment, curriculum coherence and teaching experience during their education.

Findlay (2006), corroborates the findings of previous studies by investigating how learning factors (such as self-assurance, dedication, feedback, and support) and contextual factors (such as workload allocation, work structure, and interactions with colleagues) influence five newly qualified teachers' professional identity development. Findlay stressed that transitioning from the supportive setting of teacher training programs to school environments, where constructive feedback and encouragement were scarce, significantly impacted the identities of the student teachers. She noted that tensions between these environments, as highlighted by Samuel and Stephens (2003), as 'conflicts between personal aspirations and perceived limitations in achieving them as a teacher,' played a role in fostering agency and resistance. Moreover, these researchers unanimously assert the significance of contextual factors in shaping the teacher identity of pre-service teachers.

Learning Communities
According to Wenger (1998), people create their identities through participating in cooperative learning activities within a community of practice and integrating into that community. The frameworks developed by Wenger (1998), and Gee (2014), which emphasize identity creation through speech and community participation, are commonly cited in studies in this category. These studies highlight the advantages of pre-service teachers' involvement in different learning communities.

Table 6
Studies on learning communities influencing pre-service teachers' teacher identity

NO.	Author, year and context	Method and data collection instruments	Key findings
1	Assaf (2005) USA	Qualitative (Interviews, Observation)	The negotiation of several discourses within a learning community shaped the identity and instructional decisions of pre-service teachers.
2	Murray (2008) England	Qualitative (Interviews, Observation, Reflective writings)	In addition to serving as a psychological safety net, formal collaborative practice may improve preservice teachers' perspectives on the teaching profession.
3	Seidl and Conley (2009) USA	Qualitative (Narration)	As pre-service teachers developed a stronger critical understanding of topics such as cultural specificity, systemic injustice, and identity politics, they began to recognize the implications for their teaching practice.
4	Gu (2010) Hong Kong	Qualitative (Interviews)	The action research study helped to alter preservice

			teachers' perspectives on value of educational research and how it relates to instruction.
5	Farnsworth (2010) UK	Qualitative (Interviews)	A potentially novel set of tools for student teachers to use when negotiating their identities was provided by community-based learning. Engaging with a part of identity that typically remains hidden within group-based identities could be facilitated by this approach.
6	Harlow (2014) New Zealand	Qualitative (Interviews)	This study investigated a case of an integrated, cooperative learning community that gave pre-service teachers a strong basis for their early teacher identity development.
7	Widodo & Allamnakhrah (2020) Indonesian	Qualitative (Case study)	The three-year blended professional learning community program allowed the participants to reconstruct their professional identities as curriculum builders, according to the findings.

As shown in Table 6, Assaf's (2005), investigation into how a reading specialization program impacts the teacher identity formation of pre-service teachers. This program involved activities such as classroom internships and reflective writing on teaching experiences. The results emphasized the importance of engagement in learning communities for the teacher identity development. This is consistent with Harlow's (2014), and Widodo & Allamnakhrah' (2020)research findings. The development was shown by changes in the ways that emotions and experiences were expressed in the classroom and in teaching practices. According to Murray (2008), a pre-service teacher's self-assurance, autonomy, and dedication to the field evolved through participation in a critical friend's group, where members would look at teaching techniques, carry out peer observations, and evaluate data showing their students' progress.

Seidl and Conley (2009), following a collaborative inquiry project, noted changes in the critical consciousness and awareness of pre-service teachers. Similarly, following completion of an action research project and involvement in a community-based learning group. Gu (2010), and Farnsworth (2010), documented changes in the participants' educational philosophies. All of these researches emphasize the importance of encouraging cooperation and reflective practices within learning communities and their influence on the formation of pre-service teachers' teacher identity.

The results from the above research provide teacher education programs with strong proof of the significant influence of different factors on pre-service teachers' teacher identity development.

Suggestions and Implications

Not all studies provide suggestions and implications for for the preparation of teachers, guidance for educators, or directions for future research, e.g., (Aykac et al., 2017; Olsen, 2008). Suggestions for teacher education programs: (a) Teacher programs should put an emphasis on fostering pre-service teachers' teacher identity development by creating good learning communities (Assaf, 2005; Harlow et al., 2014; Murray, 2008; Widodo & Allamnakhrah, 2020); (b) Both positive and negative experiences should be taken into account when designing programs and courses, including practicums. (Izadinia, 2016; Lamote & Engels, 2010); (c) Activities that foster self-knowledge and are focused on real-life experiences should be developed to give a more systematic education. This will encourage student teachers to explore their educational goals, beliefs, and self-efficacy, which will shape their teacher identities. (Lamote & Engels, 2010); (d) Clearly state the links between teacher education and the community in which the teaching will take place, which will help pre-service teachers feel more prepared to handle the tensions of the classroom and their own professional convictions. (Samuel & Stephens, 2003; Smagorinsky et al., 2004a).

Teacher educators who provide pre-service teachers with instruction, guidance, teaching and support (Koster et al., 2005), play a great role in teacher education programs. The relationships that pre-service teachers establish and maintain with their instructors—including associate teachers and lecturers—could have a variety of effects on how they define themselves as professionals because they spend a significant amount of time with them. Working with pre-service teachers, teacher educators, for example, may suppress and inhibit the identity of pre-service teachers (Pittard, 2003) or give them a sense of agency, power, and confidence (Liu & Fisher, 2006). Meanwhile, teacher educators should help pre-service teachers develop, complete, and maybe modify their personalities while eventually providing the foundation on which future teacher identities are constructed (Ünaldı et al., 2023).

As for future research, most researchers advise conducting long-term studies to comprehend how pre-service teachers' teacher identity has changed over time (Chen & Mensah, 2018; Findlay, 2006; Lamote & Engels, 2010; Oliveira Leite et al., 2022; Samuel & Stephens, 2003; Schepens et al., 2009; Smagorinsky et al., 2004a). For instance, a three-year study conducted by Lamote and Engels (2010) examined changes in commitment to teaching, task orientation, self-efficacy, and career orientation. Through examining how student teachers viewed their identities as instructors before, during, and following their supervised practicum, they found that several of these parts have been seen notable advancements. Pre-service teachers had a better understanding of how the teacher identity is formed during teacher education. Nevertheless, upon examination of the existing research, it appears that there is a lack of focus on investigations concerning the relationship between teacher trainers and pre-service teachers. The impact of the interaction between teacher trainers and pre-service teachers on the formation of pre-service teachers' teacher identities may be a focus of future study.

Three main limitations must be considered to fully grasp our findings. First, it's possible that we overlooked some researches or neglected their relevance. This mistake may have

happened as a result of search engines' specific algorithms and ranking systems, or it may have happened because some studies didn't fit our inclusion and exclusion criteria.

Second, some researches did not focus solely on pre-service teachers' teacher identity. To be more precise, in several research (Akyeampong & Stephens, 2003; Liu & Fisher, 2006; Schepens et al., 2009), pre-service teachers' teacher identity was examined with other variables. The review included these studies to strengthen the pool of assessed literature and given them equivalent weight. Furthermore, this study may have missed several research that were conducted in languages other than English.

Finally, we should be aware of the possibility of interpretation bias even though we have taken great care to systematically classify influencing factors into domains based on provided definitions and/or item analysis. This approach might have resulted in bias effects even though we tried to reach a consensus on categories through discussion.

Discussion and Conclusion
Pre-service teachers should benefit from taking the lead in developing and constructing their teacher identity. Therefore, they can cultivate a profound comprehension of their future professional lives, including the duties they will carry out and the objectives they hope to achieve. Researchers have been motivated to investigate the various factors that contribute to teacher identity development because of the significance of fostering a teacher identity among pre-service teachers.

In this scoping review, factors influencing pre-service teachers' teacher identity were classified into four main types, namely prior experience and learning, personal characteristics, context and learning communities. Across various studies, many studies appear to follow the same trend of highlighting positive outcomes, ignoring negative results, and minimizing difficulties in examining pre-service teachers' perceptions of identity as teachers. Just three studies (Findlay, 2006; Legard Larson & Kalmbach Phillips, 2005b; Smagorinsky et al., 2004a) examined the conflicts that pre-service teacher faced while undergoing their programs. These studies often oversimplify the process of identity development for pre-service teachers by highlighting positive outcomes while ignoring difficulties and less desirable outcomes. This tendency towards positivity may lead teacher educators and policymakers to overlook the complexities and obstacles inherent in pre-service teachers' identity formation. Consequently, the effectiveness of teacher education in facilitating and guiding this process could be significantly diminished. Hence, teacher education programs should consider both the positives and negatives of influencing factors in nurturing the teacher identity of pre-service teachers.

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