# Mentor teachers' perceptions towards pre-service teachers' preparedness to teach mathematics in primary schools in Kwa-Zulu Natal province, South Africa

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Mathematics pre-service teachers (PSTs) engage in teaching practice under the guidance of mentor teachers during teaching practice. This qualitative study explores mentor teachers' perceptions of mathematics PSTs' preparedness to teach mathematics in primary schools. An interpretive paradigm was adopted, while a case study was employed as the research design. Twelve mathematics mentor teachers were sampled through snowball sampling from twelve primary schools in Kwa-Zulu Natal province, South Africa. Open-ended questionnaires were employed to generate data, and the data were analyzed thematically. This study found that teachers have diverse views about mathematics PSTs' preparedness to teach. Some mentor teachers expressed reservations about the preparedness of mathematics PSTs to teach while others were confident about mathematics PSTs' content and pedagogical knowledge. Although some mentor teachers expressed confidence in PSTs' pedagogical content knowledge, the study recommends that all mentor teachers should support PSTs to develop their mathematics pedagogical content knowledge.

Keywords: Mathematics, mentors, pre-service teachers, primary school, teaching

Teaching practice is a model of work-integrated learning (WIL) that teacher training institutions widely use to expose pre-service teachers (PST) to the real school context. WIL enhances students' skills because it integrates academic learning with practical work experience within a designed curriculum (Winslade et al., 2023). As per Minimum Requirements of Teacher Education Qualification (MRTEQ), the framework that regulates teacher education in South Africa, mathematics PSTs are expected to undergo a minimum of 20 weeks of teaching practice for the duration of their qualification (Department of Higher Education & Training, 2015). In the institution where this study was conducted, pre-service teachers, including mathematics PSTs, engage in teaching practice for five weeks every academic year, for the duration of their qualification. Teaching practice is a key component of teacher training, and it exposes mathematics PSTs to the actual school and classroom context. Ntshangase and Nkosi (2022) stress that undergoing teaching practice enables PSTs to gain knowledge and experience the classroom environment. WIL also helps students develop their nontechnical skills, professional self-management, self-awareness, and multidisciplinary abilities (Jackson, 2017). In addition, students have access to social networks, workplace networking, and professional learning opportunities (Ferns et al., 2021), during teaching practice, as mathematics PSTs are expected to serve in a real school for a specified period. Teaching practice is seen by many as a conducive environment for PSTs to showcase their content knowledge, pedagogical knowledge, and technological knowledge (Jita & Sintema, 2022). From this experience, PSTs are expected to learn and develop professionally to become mathematics teachers in the future.

During teaching practice, mathematics PSTs are placed under the guidance of mentor teachers. Ndebele and Legg-Jack (2022) view mentoring during teaching practice as integral to PSTs' learning and facilitate PSTs to be prepared by serving teachers in an authentic school setting. Engaging in

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teaching practice enables mathematics PSTs to be guided and coached by experienced mentor teachers (Pourdavood & Song, 2021). The main responsibility of mentor teachers is to assist mathematics PSTs in navigating from self-identity to development within the wider environment of the school during teaching practice (Ntshangase & Nkosi, 2022). Mentor teachers assist mathematics PSTs to develop professionally. Facilitating the professional development of mathematics PSTs during teaching practice may include guiding and coaching them to engage in different school activities. These activities may consist of actual teaching of mathematics, lesson preparations, assessments, classroom management, administrative duties, and learner discipline (Kania et al., 2020).

Although PSTs commonly engage in teaching practice after gaining a certain level of theoretical knowledge from their teacher training institutions, the critical role of mentor teachers in the professional development of mathematics PSTs cannot be overemphasized. Mentor teachers play a crucial role in exposing, guiding, and coaching PSTs in actual school activities (Ismail & Jarrah, 2019). Therefore, eliciting their views on PSTs' preparedness to teach mathematics in primary schools is essential. Hence, this study aims to elicit mentor teachers' perceptions on the preparedness of PSTs to teach mathematics in primary schools.

## LITERATURE REVIEW

### *Role of Mentor Teachers in Shaping Pre-Service Teachers' Professional Skills*

Mentor teachers support PSTs to grow professionally. During teaching practice, mentor teachers serve as role models to PSTs because they model professional behavior that PSTs can emulate during and beyond teaching practice (Dos Santos, 2021). This view suggests that mentor teachers can have an everlasting influence on the professional life of PSTs because of the modeling of professional behavior that PSTs observe as they engage in their pedagogical practices. Mentor teachers are, therefore, expected to be active and creative experts who can exhibit outstanding professional behavior to PSTs (Bhebhe, 2022). Furthermore, mentor teachers are expected to identify strengths and weaknesses of PSTs and to assist them in improving on areas of weakness (Bada & Jita, 2023). Mentor teachers should have good judgment to determine areas where PSTs need to be supported for professional development. Having the ability to evaluate and provide support to PSTs requires mentor teachers to create and maintain positive relationships with PSTs (Hvalby, 2022). Mentor teachers should relate to PSTs as colleagues and provide support for them to grow professionally. Providing meaningful support to PSTs helps PSTs to engage in teaching practice (Gordon, 2019) and transition to the broader teaching profession.

To support PSTs professional growth, mentor teachers should introduce PSTs to the school community and to school activities (Mkhasibe et al., 2018). Mentor teachers are encouraged to work closely with PSTs to orientate them to school activities such as classroom management, lesson planning, teaching mathematics, assessment, providing feedback to learners, and extra-curricular activities. Proper orientation to the teaching profession assists PSTs in overcoming complexities associated with teaching that potentially overwhelm PSTs (Bada & Jita, 2023). These complexities may lead to frustrations; hence, proper mentoring is required. Since teaching practice can be emotionally overwhelming for some PSTs, mentor teachers are required to provide emotional support to them (Bhebhe, 2022). The emotional support provided to PSTs during teaching practice can boost their confidence levels in executing their duties as teachers. A study conducted by Mkhasibe and Mncube (2020) revealed that engaging in teaching practice positively influences PSTs' confidence levels. Some PSTs feel less confident about

their classroom management skills (Mkhasibe & Mncube, 2020), hence the need for mentor teachers to support mathematics PSTs during teaching practice.

*Role of Mentor Teachers in Nurturing Pre-service Teachers' Content Knowledge*

Mentor teachers guide and coach PSTs during teaching practice for them to be competent in teaching mathematics content. Content knowledge encompasses the concepts, ideas, and theories of a particular subject that have been mastered by a teacher (Shulman, 1987). As future teachers, mathematics PSTs are expected to have adequate content knowledge of mathematics. Hence, mentor teachers must help them to refine their content knowledge during teaching practice. PSTs need to learn and be open to learning new ideas from mentor teachers to positively impact their teaching and broaden their content knowledge (Schwan et al., 2020). This will give PSTs a good foundation to understand how primary school students learn mathematics (Lisenbee & Tan, 2019). Mentor teachers create a safe, relaxed, and flexible mentoring environment for such learning and model best practice approaches to teaching mathematical content to learners.

Observing the lessons taught by mentor teachers enhances mathematics PSTs mathematics content knowledge. PSTs observe mentor teachers dealing with classroom management, learner engagement, and various teaching strategies. Direct exposure of PSTs to the classroom bridges the gap between theory and practice (Wages, 2021). This will also expose PSTs to a conceptual understanding of mathematical principles rather than mere rote memorization. From this, PSTs will be able to cultivate problem-solving and critical thinking skills in learners (Khalid et al., 2020). Mentor teachers can also organize feedback sessions with PSTs. Discussions and feedback that are provided during feedback sessions assists PSTs in fine-tuning their content knowledge.

*Role of Mentor Teachers in Nurturing Pre-Service Teachers' Pedagogical Knowledge*

Mentor teachers provide guidance on pedagogical knowledge to PSTs by sharing various teaching methods that are suitable for teaching a particular subject (König et al., 2020). Teachers' knowledge of the subject's teaching methods is known as pedagogical knowledge. Pedagogical knowledge is gained over time while learning to teach and when teachers are putting their skills into practice in the teaching field (Kadarisma et al., 2019). Demonstrating various mathematics teaching methods exposes PSTs to appropriate teaching methods and resources for explaining mathematical concepts. Mentor teachers and PSTs engage collaboratively to facilitate meaningful learning experiences and ensure that PSTs gain valuable insights into their teaching practices. Integration of real-world context through real objects and examples is emphasized in mathematics classrooms (Boaler, 1993). Classroom dynamics and engagement with mentor teachers in the learning environment are valuable to PSTs as they provide practical application of pedagogical concepts (Tuychieva, 2015). Mathematical concepts are demonstrated as practical, concrete, and relevant concepts that occur in everyday life situations (Baroody et al., 2019). Engagement with learners based on their needs and reactions creates an eagerness to learn more about the pedagogical strategies that can be employed to accommodate diverse learners in the classroom (Franklin & Harrington, 2019).

Mentors are encouraged vary their tools and activities to expose PSTs to diverse tools to enhance their mathematics teaching. Technology tools can also be integrated to leverage from the capacity of digital tools to enhance the teaching and learning of mathematics during teaching practice. Visuals and effective communication of mathematics ideas is encouraged when teaching in the classroom (Ziatdinov & Valles, 2022). PSTs are exposed to a variety of teaching methods to advance their understanding of mathematics teaching through collaboration and cooperation between mentor and

PSTs. For inclusive classroom environments, differentiated teaching strategies, which adapt learning content to support diverse learning needs, styles, and abilities in the classroom, are applied (Tomlinson, 2021). Strategies on assessment methods and types of assessment to gauge learners' performance and understanding of mathematics are some of the techniques that are learnt during the mentoring process.

## THEORETICAL FRAMEWORK

Lave and Wenger's (1991) situated learning theory (SLT) acknowledges that learning occurs through active participation in real-world activities. SLT is adopted for this study because it provides a solid theoretical lens for examining mathematics mentor teachers' interactions with PSTs. SLT indicates that learning is most successful when it takes place in the context in which it will be used; it claims that instructional tasks should always be grounded in an authentic, real-world setting for efficiency (Lave & Wenger, 1991). SLT emphasizes the importance of social interaction and real-world experiences in learning. The proponents of SLT concede that there is a deeper relationship between theory and practice. It has been noted that mentor teachers can effectively illustrate their mastery of the subject matter and pedagogy and progressively offer PSTs practical advice as they assume roles in the classroom to close the theory-practice gap. SLT was used in the study to understand how mentor teachers view PSTs' preparedness to teach mathematics in selected primary schools in South Africa. SLT recognizes (or acknowledges) the value of social connection, community, and experts, which takes place in the form of a community of practice (CoP), which is also critical in the formation of skilled mathematics teachers (Townley, 2020). Being part of the CoP helps mathematics PSTs to collaborate with mentor teachers during teaching practice in executing their duties.

## METHODOLOGY

This qualitative study is underpinned by phenomenology as its research design. Phenomenology research design entails the understanding of the participants' lived experiences in relation to the phenomenon under investigation (Reiners, 2012). Employing phenomenology assisted the researchers to understand the subjective experiences of the participants. Adopting a qualitative research approach assisted researchers in gauging the views of the participants in relation to the preparedness of PSTs to teach mathematics in primary schools. In accordance with the research approach adopted in this study, interpretive paradigm was employed to locate this study. Locating this study within the interpretive paradigm helped the researchers to explore the phenomenon under investigation deeply. Snowballing sampling technique was used to select twelve mathematics teachers from twelve primary schools located in Kwa-Zulu Natal province, South Africa. Initially, two mathematics primary school teachers were recruited based on their experience in mentoring PSTs. They were then requested to recruit other mathematics teachers with more than five years' experience in teaching mathematics in primary schools and who have previously mentored PSTs. Adopting snowballing sampling enabled a wide range of participants to enhance the rigor of research findings. Parker et al., (2019) assert that adopting snowball sampling provides access to geographically dispersed participants due to the social links of the participants. Biographical details of the participants are shown in Table 1.

Open ended questionnaires using Google Forms were then dispersed to the participants via WhatsApp. A link to access Google Forms was sent to the participants, and the participants were given two weeks to respond to the questionnaire. This timeframe allowed participants time to reflect on the phenomenon under investigation. After receiving responses from all 12 mathematics primary school teachers, the researchers engaged in data analysis. Thematic analysis was adopted to analyze data. Upon receiving responses from the participants, the researchers engaged in organizing data, reading,

and rereading the raw data for a deep understanding of it, and allocating codes to emerging themes. The codes allocated to the raw data were then developed into themes and sub-themes that were used to report the findings of the study.

TABLE 1: Biographical data of the participants.

| Participants | Gender | Age group | Highest qualification | Years of teaching experience |
|---|---|---|---|---|
| Mentor 1 | Male | 30–40 | B Ed Honours | 9 |
| Mentor 2 | Female | 30–40 | B Ed | 7 |
| Mentor 3 | Male | 40–50 | B Ed Honours | 10 years |
| Mentor 4 | Female | 30–40 | PGCE | 15 years |
| Mentor 5 | Female | 50–60 | Diploma in Education | 28 years |
| Mentor 6 | Female | 40–50 | B Ed | 20 years |
| Mentor 7 | Male | 40-50 | B Ed | 15 years |
| Mentor 8 | Female | 40-50 | B Ed | 11 years |
| Mentor 9 | Female | 50-60 | Diploma in Education | 13 Years |
| Mentor 10 | Female | 30-40 | B Ed | 10 years |
| Mentor 11 | Male | 40-50 | B Ed | 16 years |
| Mentor 12 | Female | 40-50 | B Ed | 12 years |

*Ethical Considerations*

Ethics clearance was obtained from the academic institution where this study was conducted. Ethical certificate number 2023/08/10/90256867/20/AM was issued by the ethics review committee. In accordance with ethical considerations, the participants were informed about their rights during the study, including the right to withdraw their participation. Furthermore, to protect the identity of the participants, pseudonyms were used to report the findings of the study.

FINDINGS

The main themes and sub-themes that emanated during data analysis were used to present the findings of this study. The summary of the key findings is presented in Table 2 below.

TABLE 2: Summary of the key findings.

| Themes | Key findings |
|---|---|
| **Main Theme: Significance of Content Knowledge in Lesson Presentation** | |
| PSTs' content knowledge | Few mentor teachers underscored that PSTs lack mathematics content knowledge, while others were confident that PSTs possess adequate content knowledge. |
| Impact of lack of self-confidence on lesson presentation | The study found that PSTs lack self-confidence which negatively impacts their classroom management. |
| **Main Theme: PSTs' Knowledge of Teaching Methods** | |
| PSTs' understanding of teaching methods | The study revealed that few mentor teachers believe that some PSTs fail to implement differentiated teaching to cater for the different levels of learners' understanding of mathematics content.<br>On the other hand, some mentor teachers believe that PSTs have adequate knowledge of implementing the teaching methods that are suitable for teaching mathematics. |
| Actual use of teaching methods by PSTs | It emerged from the study that mentor teachers have different views on the teaching methods that are adopted by PSTs to teach mathematics. Some believed PSTs use teacher-centred methods while others believe that they use learner-centred teaching method. |
| Support to PSTs by mentor teachers | The study reported that mentor teachers support PSTs in different ways including organizing weekly subject content meetings to enable PSTs to deepen their content knowledge. |

*Significance of Content Knowledge in Lesson Presentation*

This theme focuses on presenting mentor teachers' views on the content knowledge possessed by PSTs during teaching practice. Mentor teachers' views are detailed in the sub-themes below.

*PSTs' content knowledge*

Mentor teachers who guide and develop PSTs identified content knowledge as being fundamental for teaching mathematics. Some mentor teachers pointed out PSTs lack mathematics content knowledge, while others were confident that PSTs possess adequate content knowledge. Among those who expressed concerns about the level of PSTs' mathematics content knowledge was Mentor 1: "Their

content knowledge is inadequate together with the use of mathematical terminology and application of content in lessons."

Mentor 3 shared similar sentiments as Mentor 1: "They do not possess the full content knowledge."

Mentor 10 further mentioned that some PSTs lack fundamental mathematics content knowledge such as fractions, geometry "Construction of geometric figures, transformations geometry and common fractions."

Similarly, Mentor 11 added "Yes. they normally struggle with long division divide, multiply, subtract."

The responses above indicate that some mentor teachers believe that PSTs lack mathematics content knowledge. Such observations by mentor teachers are concerning because a lack of mathematics content knowledge among primary PSTs means that primary school learners will not get a proper mathematics foundation, which is critical for their success in the upper grades.

On the other hand, Mentor 7, and Mentor 8 expressed confidence in the level of mathematics content knowledge possessed by PSTs. Mentor 7 asserted: "I assessed my pre-service teacher in such a way that I found that she knew the content very well, although she still needs some assistance in order to be a great mathematics teacher in the future."

Mentor 8 was also confident about the content knowledge that the PSTs receive from their education programmes. "Yes, the universities do an outstanding job in teaching our students the content. They come with outstanding theory information. I have noticed that they need good mentoring skills in practical teaching."

From the mentors' accounts, it can be concluded that they have differing views on the adequacy of content knowledge possessed by PSTs. Mentor teachers' opposing views on PSTs' levels of content knowledge might be attributed to the fact that they mentor PSTs who are at different levels of their studies. PSTs undergo teaching practice from their first level of education to their final level, with third and fourth years expected to teach. PSTs at an advanced level of their studies might showcase adequate content knowledge compared to those at the early stages of their studies. Nevertheless, the concerns that were expressed by Mentor 1 and Mentor 3 should be taken seriously.

*Impact of lack of confidence on lesson presentation*

Teachers' level of confidence is vital during lesson presentations. This sub-theme reported that mentor teachers believe PSTs' lack of content knowledge negatively affects their confidence during lesson presentations.

Mentor 4 said "Their lack of content knowledge affects their self-confidence during lesson presentations, and it also makes learners lose interest in the lesson."

Mentor 2 shared a similar observation as Mentor 4:"Learners tend to be loud, disruptive, lose focus, and show disrespect to the teacher if the pre-service are not confident in the classroom. Both learners and teachers become frustrated, and the teacher becomes unsure of what to do."

These findings suggest that a lack of content knowledge negatively impacts PSTs' lesson presentations. This may lead to learners losing interest in the lesson, which may result in failure to achieve lesson objectives. Furthermore, Mentor 2 underscored that low PSTs' confidence levels may lead to poor classroom management. Learners might be disruptive, and their learning experience compromised.

*PSTs' Knowledge of Teaching Methods*

This theme reports on mentor teachers' views on PSTs' pedagogical knowledge. It emerged from this theme that mentor teachers have divergent views on the pedagogical knowledge of PSTs. Mentor teachers' views are further discussed in the following sub-themes.

*PSTs' understanding of teaching methods*

In this sub-theme, mentor teachers gave their views on PSTs' understanding of teaching methods that are suitable for teaching mathematics. Mentor 1 had this to say:

> No, I don't think they fully understand teaching methods to teach mathematics. They normally follow teacher-centred methods, and for them, teaching mathematics is about arriving at the answer (what, rather than the (how) of the steps taken to arrive at an answer.

Mentor 1's assertion suggests that pre-service teacher's lack knowledge of teaching methods that can make mathematics understandable and interesting to the learners. Aiming only to arrive at the correct answer without understanding the steps involved in a particular sum cannot be deemed as an effective teaching of mathematics. Furthermore, Mentor 3 alluded that some PSTs struggle to adopt suitable teaching methods that would cater for learners' cognitive levels. He said:

> No, some PSTs struggle to bring the lesson to learners, cognitive level. They assume that all learners are functioning at the same level, which may negatively affect primary school learners because they are still young; they need to be taken through each and every step.

Essentially, Mentor 3 insinuates that PSTs fail to apply differentiation techniques where different teaching methods are used to cater for learners' needs. Teachers' failure to accommodate all learners in the classroom may result in some learners getting lost in the lesson and losing interest.

Mentor 7 made an interesting observation:

> You know, some PSTs use teaching methods that their teachers used during their school time, and they do not apply what they have learnt. They don't even try to apply their new knowledge learnt from the University, but they rely on previously used methods.

This observation is critical because it shows that some PSTs are reluctant to apply new knowledge learnt from the teacher education programmes.

On the other hand, some mentor teachers appeared to be optimistic about PSTs' understanding of teaching methods suitable for teaching mathematics in primary schools. For example, Mentor 11 asserted that PSTs are familiar with teaching methods that are appropriate for teaching mathematics because they are the product of the curriculum that emphasizes learner-centred teaching methods. He said:

> Yes, they do, because they are the product of cooperative learning, group work, pair work, and other related learner-centred teaching methods. Remember, learners teaching now are the product of the Curriculum and Assessment Policy (CAPS) that encourages learners to be taught through learner-centred teaching methods.

Mentor 12 also added that PSTs understand mathematics teaching methods and adopt practical teaching methods, when presenting lessons. He said: "Yes, because most of them understand that

mathematics is a practical subject, so they also use teaching methods that are practical for the learners to understand mathematics concepts."

From these findings it can be deduced that mentor teachers have different views on PSTs' understanding of teaching methods suitable for teaching mathematics. Despite their differing views, one can infer that mentor teachers see the crucial role that is played by PSTs' ability to use methods suitable for teaching mathematics during teaching practice.

The next sub-theme reports on the actual implementation of different teaching methods by PSTs to teach mathematics during teaching practice.

*Actual use of teaching methods by pre-service teachers*

This sub-theme reports mentor teachers' views on PSTs' abilities to implement different teaching methods suitable for teaching mathematics in primary schools. Mentor 1 said: "I don't think so, some only use teacher-centred methods, which focus on chalk and talk where they demonstrate the linear methods of solving mathematics problems without expanding further for learners to understand how he arrived at an answer."

Mentor 1's commentary suggests that some PSTs do not implement appropriate teaching methods to teach mathematics. This view is also supported by Mentor 2, who indicated that: "They use teacher-centred, monotonous methods, without making effort to stimulate learners' interests towards the subject."

In contrast to the comments presented above, Mentor 8 asserted that "PSTs understand teaching methods and use them very well. They are able to plan the lesson that will cater for different cognitive levels of the learners."

A similar observation was also made by Mentor 11 who highlighted that "Some PSTs are able to implement novel methods of teaching mathematics by using games, flashcards and they make teaching maths fun."

The commentaries by Mentor 8 and Mentor 11 show that some PSTs can implement suitable teaching methods recommended for teaching mathematics. Choosing a suitable teaching method makes the teaching and learning process enjoyable for learners.

*Support to PSTs by mentor teachers*

This sub-theme reports on how mentor teachers support PSTs who lack pedagogical knowledge during teaching practice. Mentor 1 stated: "I encourage them to use concrete learning materials and allow learners to think critically in order to arrive at the solution to a problem through discussions."

This means that Mentor 1 motivates PSTs to support their instruction with concrete learning materials. Since they are teaching at a primary school, adopting concrete learning materials may help to facilitate learners' understanding of mathematics concepts. Furthermore, Mentor 1 indicated that she encourages PSTs to involve learners in their lessons, allowing them to discover solutions to mathematics problems through discussion with their peers.

Asked to reflect on the same issue, Mentor 5 mentioned, "I encourage PSTs to attend weekly subject meetings to further develop them."

From Mentor 5's commentary, it can be insinuated that he invites PSTs to attend weekly subject meetings where issues relating to the teaching of mathematics are discussed. Exposing PSTs to such meetings can also help them to receive guidance from other teachers who teach mathematics in other classes.

## DISCUSSION

This study sought to elicit mentor teachers' perceptions on PSTs' preparedness to teach mathematics in primary schools. Teachers' beliefs are an important focus of educational analysis, as it requires clear conceptualizations, careful examination of key assumptions, consistent understandings and adherence to accurate meanings, and proper assessment and investigation of specific belief concepts (Pajares, 1992). It emerged from the findings that mentor teachers had divergent views on the level of mathematics content knowledge that is possessed by PSTs. Some mentor teachers underscored that PSTs lack mathematics content knowledge, while others were confident that PSTs possess adequate content knowledge. The study that was conducted by Hine and Herbert (2022) revealed that mathematics PSTs were not ready to teach mathematics due to lack of content knowledge. Furthermore, a study that was conducted by Askew et al. (2019) revealed that South African pre-service primary school teachers lack deep mathematics content knowledge. Interestingly, the finding of the current study differs from that of the studies that was conducted by Hine and Herbert (2022) and Askew et al. (2019). Nevertheless, having some mathematics PSTs who lack adequate content knowledge as contended by some mentor teachers is concerning. This is because primary mathematics teachers are required to provide the foundation of mathematics to learners. Ideally, all mathematics PSTs should be proficient in understanding and teaching mathematics. Furthermore, this study revealed that lack of mathematics content knowledge among some PSTs affects their level of confidence when presenting the lessons during teaching practice. This finding is contrary to the study that was conducted by Hine and Thai (2018), which revealed that pre-service teachers confidently teach mathematics in lower primary schools. Low self-confidence when presenting mathematics lessons can be expected because adequate content knowledge is key for teachers' confidence. In other words, if a teacher has adequate content knowledge, there is a high possibility that their level of confidence can be boosted.

It emerged from the study that several mentor teachers believe that some pre-service teachers lack pedagogical knowledge. On the other hand, there were mentor teachers who believed that some PSTs have knowledge of implementing teaching methods suitable for teaching mathematics. These findings indicate that there was no accord between the mentor teachers on pedagogical knowledge of PSTs. This finding can be expected in the context where mentor teachers' mentor different cohorts of PSTs who are at different levels of their studies. A study that was conducted by Sintema and Marbán (2020) also revealed that mathematics PSTs lack pedagogical knowledge. It furthermore emerged from this study that few mentor teachers believe that some PSTs fail to implement differentiated teaching to cater for the different levels of learners' understanding of mathematics content. It emerged that some PSTs prioritize arriving at the correct answer when teaching mathematics without explaining to learners why certain actions need to be implemented before arriving at the correct answer. In contrary, there were some mentor teachers who contended that some PSTs implement suitable teaching methods when teaching mathematics.

This study showed that mentor teachers understood their role in supporting PSTs to develop professionally. The study found that since some mentor teachers noticed that some PSTs lacked content and pedagogical knowledge, they took it upon themselves to devise strategies to nurture PSTs' content and pedagogical knowledge. It transpired that some mentor teachers organized one-on-one meetings

with PSTs to coach them on how mathematics is taught. Finally, the study revealed that mentor teachers provided additional resources to preservice teachers so they could enrich their mathematics content knowledge and prepare adequately for their lessons. Li et al., (2021) found that mentor teachers contribute greatly to the professional development of PSTs. These findings also resonate with the aspirations of social learning theory, where experts introduce beginners to a community of practice (Townley, 2020).

Based on the finding of this study, it can be concluded that some of the findings are aligned to the aspirations of the situated learning theory as opined by Lave and Wenger (1991). The proponents of situated learning theory suggests that learners (PSTs) learn from the experts (mathematics mentors) in order for them to develop the expertise that would enable them to become experts in a certain field. Correspondingly, it transpired from this study that mathematics mentor teachers provide guidance to PSTs who lack content or pedagogical knowledge through subject meetings to enable them to acquire content and pedagogical knowledge. In line with the situated learning theory, the study also found that some mentor teachers provided resources to PSTs to assist them in their teaching during teaching practice. This suggests that mentor teachers understand that they need to support PSTs in order for them to move from the periphery of the community of practice (CoP) to the center of the CoP as they get closer to becoming qualified teachers.

## CONCLUSION

The study aimed to elicit mentor teachers' perceptions on PSTs' preparedness to teach mathematics. Findings indicate that mentor teachers have diverse perceptions on PSTs' preparedness to teach mathematics. Some mentor teachers expressed reservations about PSTs' preparedness to teach. They highlighted lack of self-confidence during lesson presentation, and limited understanding of the use of different teaching methods. Nevertheless, a proportion of mentor teachers were confident about the content and pedagogical knowledge possessed by mathematics PSTs, for example, the use of teacher-centered and learner centered methods. There was also significant evidence of support by mentor teachers. Although some mentor teachers expressed confidence on PSTs' pedagogical content knowledge (PCK), the study still recommends that all mentor teachers should support PSTs to develop their mathematics PCK. Also, encouraging the use of diverse teaching methods to enrich their practices and also to accommodate learners' different learning styles.

This study recommends that a further study of this nature be conducted in the future where PSTs are included so that their views can be sought as well. Also, a quantitative study should be conducted in the future to allow for a larger number of mathematics mentor teachers to participate so that the findings can be generalized to a larger population.

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International Journal of Work-Integrated Learning
ISSN: 2538-1032
www.ijwil.org

**About the Journal**

The International Journal of Work-Integrated Learning (IJWIL) publishes double-blind peer-reviewed original research and topical issues related to Work-Integrated Learning (WIL). IJWIL first published in 2000 under the name of Asia-Pacific Journal of Cooperative Education (APJCE).

In this Journal, WIL is defined as:

> *An educational approach involving three parties – the student, educational institution, and an external stakeholder – consisting of authentic work-focused experiences as an intentional component of the curriculum. Students learn through active engagement in purposeful work tasks, which enable the integration of theory with meaningful practice that is relevant to the students' discipline of study and/or professional development* (Zegwaard et al., 2023, p. 38*).

Examples of practice include off-campus workplace immersion activities such as work placements, internships, practicum, service learning, and cooperative education (co-op), and on-campus activities such as work-related projects/competitions, entrepreneurships, student-led enterprise, student consultancies, etc. WIL is related to, and overlaps with, the fields of experiential learning, work-based learning, and vocational education and training.

The Journal's aim is to enable specialists working in WIL to disseminate research findings and share knowledge to the benefit of institutions, students, WIL practitioners, curricular designers, and researchers. The Journal encourages quality research and explorative critical discussion that leads to the advancement of quality practices, development of further understanding of WIL, and promote further research.

The Journal is financially supported by the Work-Integrated Learning New Zealand (WILNZ; www.wilnz.nz), and the University of Waikato, New Zealand.

**Types of Manuscripts Sought by the Journal**

Types of manuscripts sought by IJWIL is primarily in two forms: 1) *research publications* describing research into aspects of work-integrated learning and, 2) *topical discussion* articles that review relevant literature and provide critical explorative discussion around a topical issue. The journal will, on occasions, consider good practice submissions.

*Research publications* should contain; an introduction that describes relevant literature and sets the context of the inquiry. A detailed description and justification for the methodology employed. A description of the research findings - tabulated as appropriate, a discussion of the importance of the findings including their significance to current established literature, implications for practitioners and researchers, whilst remaining mindful of the limitations of the data, and a conclusion preferably including suggestions for further research.

*Topical discussion articles* should contain a clear statement of the topic or issue under discussion, reference to relevant literature, critical and scholarly discussion on the importance of the issues, critical insights to how to advance the issue further, and implications for other researchers and practitioners.

*Good practice and program description papers*. On occasions, the Journal seeks manuscripts describing a practice of WIL as an example of good practice, however, only if it presents a particularly unique or innovative practice or it was situated in an unusual context. There must be a clear contribution of new knowledge to the established literature. Manuscripts describing what is essentially 'typical', 'common' or 'known' practices will be encouraged to rewrite the focus of the manuscript to a significant educational issue or will be encouraged to publish their work via another avenue that seeks such content.

By negotiation with the Editor-in-Chief, the Journal also accepts a small number of *Book Reviews* of relevant and recently published books.

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