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CONSENSUS BUILDING ON MATHEMATICS TEACHER READINESS: A STUDY USING THE MODIFIED NOMINAL GROUP TECHNIQUE

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Abstract: *This study was conducted to achieve expert consensus on a model of mathematics teachers' readiness as agents of change, which integrates professional knowledge and pedagogical skills. The Modified Nominal Group Technique (MNGT) was employed to evaluate the usability of the developed model. Mathematics teachers play a critical role in implementing educational reforms and therefore require guidance to ensure their readiness in meeting the demands of contemporary educational changes. However, previous studies have highlighted significant gaps in teacher readiness, particularly in linking professional expertise with more innovative teaching methods. Thus, this study utilized MNGT to ensure that the developed model meets suitability criteria based on systematic consensus. To evaluate its suitability and user satisfaction, 16 implementing experts were involved in workshop sessions. These experts were selected based on their service experience and backgrounds in mathematics. The evaluation results revealed that all the implementing experts agreed that the developed model is suitable and comprehensive as a guide for mathematics teachers. They also believed that the model is highly practical for application in classrooms, as its content encompasses critical aspects that teachers should address to conduct more effective teaching processes. The findings of this study are significant as a pragmatic framework for developing teacher professional programs and formulating policies to enhance the readiness of mathematics teachers in facing change. Further studies are recommended to assess and refine the proposed model across various educational settings.*

Keywords: *Readiness, Mathematics Teacher, Consensus, Modified Nominal Group Technique*

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Introduction

Teacher readiness is a critical factor in ensuring the effectiveness of educational reforms. According to Dewan Bahasa dan Pustaka, (2015) readiness is defined as the state of being prepared, willing, and capable of change. It also encompasses an individual's belief in the appropriateness, support, and value of transformation (Jaggil Apak & Muhammad Suhaimi Taat, 2018). In the context of educational change, teacher readiness is crucial, as teachers are the key implementers of curriculum and pedagogical transformations (Abu Bakar et al., 2015). During times of reform, teachers must adapt and manage the evolving demands of instruction to maintain the quality of teaching and learning. However, despite the central role of teachers in implementing changes, studies have primarily focused on their readiness in adopting new teaching methodologies, such as integrating technology into the classroom (Deng et al., 2019; Aziz & Maat, 2021), rather than a holistic view of teacher preparedness in curriculum development and pedagogical practices.

Existing research has often emphasised teacher readiness in specific instructional approaches without fully addressing its broader implications for curriculum development. Readiness in curriculum implementation requires teachers to engage in planning, execution, and evaluation, encompassing instructional strategy selection, student assessment, application of learning theories, as well as motivational and psychological aspects (Hata & Mahmud, 2020; Winsor et al., 2018). Over the past decade, empirical studies have explored various dimensions of teacher readiness, including online teaching (Fakhrunisa, 2021), teaching experiences in different school environments (Seyma & Meltem, 2021), teacher-student interactions (Maatta et al., 2021), and implementing new curricula such as STEM (Moon et al., 2021). While these studies provide valuable insights, a comprehensive framework that integrates professional knowledge and pedagogical skills, particularly in mathematics education, is still needed to support teacher readiness effectively.

Given the evolving demands on teachers, including increasing non-teaching responsibilities, their readiness for professional knowledge and pedagogical skills remains a priority (Rich, 2021). Professional knowledge and pedagogical expertise are dominant factors that significantly influence teachers' behaviour and instructional effectiveness (Mayne, 2019). Mastering these elements enables teachers to refine their teaching practices and enhance the quality of mathematics instruction (Brown, 2017). Despite extensive research on teacher readiness, a consensus-driven model that systematically prioritises the key elements of mathematical teacher readiness is still lacking. This study aims to fill in that gap by using the Modified Nominal Group Technique (MNGT) to create a complete model of mathematics teacher readiness that includes both professional knowledge and pedagogical skills, which are important for effective teaching.

Literature Review

Three key points will be discussed in this literature review: (i) conceptualizing teacher readiness, including its definitions, dimensions, and significance in education; (ii) teacher readiness in mathematics education through the lens of Michael Fullan's Change Theory; and (iii) consensus-building approaches in educational research, with a focus on the Modified Nominal Group Technique (MNGT). These aspects provide a comprehensive understanding of teacher readiness, particularly in the context of curriculum implementation and pedagogical practices. The following sections will elaborate on these points in detail.

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Conceptualizing Teacher Readiness: Definitions, Dimensions, and Importance

The effectiveness of curriculum implementation and pedagogical advancements largely depends on teachers' readiness. Effective teachers' fundamental qualities are their ability to establish meaningful interactions with students and foster a conducive learning environment built on respect, encouragement, and engagement (López-Martín et al., 2022). As education systems continue to evolve, communication has become an essential element in delivering instructional content effectively (Moore-Russo et al., 2013; Tkavashvili, 2021). The rapid transformations in educational policies and curriculum frameworks require teachers to be well-prepared, as they are the key drivers of these changes (Talib et al., 2024). Readiness among teachers has been defined as a process that involves emotional and physical preparedness (Agus, 2021; Ling & Matore, 2020) as well as the willingness to embrace and implement new pedagogical approaches (Jung et al., 2019). In curriculum development, teacher readiness is a key factor in determining the success or failure of educational initiatives. This includes planning, implementing, and evaluating. A well-developed curriculum aims to equip students with diverse competencies, enabling them to meet future challenges effectively. According to Mohd Napiah and Hashim (2021), teachers must possess a strong foundation of knowledge and skills to understand, plan, and execute instructional practices efficiently.

In the planning stage, teachers are responsible for understanding curriculum reforms, selecting appropriate instructional content, and setting clear learning objectives (Demir & Qureshi, 2019). A strong grasp of these elements is essential, as they form the foundation of effective teaching. However, teachers often face challenges when adapting to curriculum changes, such as the integration of STEM education. Studies indicate that many educators exhibit moderate levels of readiness (Probosari et al., 2021) and motivation (Jekri & Han, 2020), resulting in inconsistencies in STEM instruction and uncertainty in selecting appropriate teaching methods (Bajuri et al., 2020; Yean & Abdul Rahim, 2021). Furthermore, content selection is a critical aspect of teacher readiness, particularly in mathematics education. Educators must navigate various mathematical topics, including geometry (Abdullah et al., 2020), algebra (Pincheira & Alsina, 2021; Ulusoy, 2020), and calculus (Maher et al., 2022). To ensure effective content delivery, teachers must develop strong observational skills (Copur-Gencturk & Rodrigues, 2021), allowing them to align instructional materials with students' learning needs while incorporating diverse pedagogical strategies.

Beyond planning, teachers must also conduct needs analysis to structure their instruction based on curriculum flexibility and student capabilities (Ornstein & Hunkins, 2018). This process ensures that teaching strategies, assessment methods, and curriculum implementation are effectively adapted to meet diverse student needs (Usanov & Qayumov, 2020). Since education systems continuously evolve, teachers must engage in ongoing professional development to enhance their instructional readiness. By strengthening their professional knowledge and pedagogical skills, teachers can optimise classroom practices, improve students' learning outcomes, and contribute to a more dynamic and effective educational environment. Therefore, teacher readiness remains a key component in fostering meaningful learning experiences and ensuring the successful implementation of curriculum reforms.

Teacher Readiness in Mathematics Education Through the Lens of Michael Fullan's Change Theory

Educational change is a complex process that requires commitment, adaptability, and sustained efforts from teachers. Michael Fullan's Change Theory (2007) provides a valuable framework for understanding how teachers adapt to changes in mathematics education, particularly in

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implementing new curricula, instructional strategies, and assessment methods. According to Fullan, successful change occurs through three core components: (i) the implementation of new ideas and practices, (ii) the restructuring of organizational conditions, and (iii) the deepening of professional commitment and beliefs.

In mathematics education, these components are crucial in preparing teachers to embrace innovative pedagogical approaches, integrate technology, and refine assessment strategies to meet evolving student needs. However, resistance to change is often observed due to inadequate support, limited professional development, and the fear of failure (Fullan & Thiers, 2017). Without structured intervention and capacity-building initiatives, teachers may struggle to transition effectively, impacting the overall quality of mathematics instruction.

Fullan and Hargreaves (2014) emphasizes that teacher readiness for change is driven by motivation, capacity, and contextual factors. In mathematics education, motivation can stem from teachers' intrinsic beliefs about the value of new instructional methods, while capacity depends on their professional knowledge and skills. A study by Probosari et al. (2021) found that many teachers exhibit only moderate levels of readiness in implementing STEM-based mathematics teaching, primarily due to gaps in content knowledge and pedagogical strategies. Additionally, contextual factors such as school leadership, peer collaboration, and institutional support significantly influence how teachers engage with curriculum changes (Burner, 2018). Fullan's framework suggests that fostering a collaborative culture among teachers, providing ongoing professional learning, and ensuring administrative support are key to overcoming these barriers. When these conditions are met, teachers are more likely to transition successfully into new instructional roles and develop sustainable teaching practices that enhance student learning outcomes.

Applying Fullan's Change Theory to mathematics education highlights the need for a systematic approach to teacher readiness that goes beyond individual efforts. Instead, a collective, school-wide commitment to change is necessary to build a professional learning community that fosters innovation and continuous improvement. As mathematics education evolves, teachers must not only acquire new knowledge and skills but also engage in reflective practices that allow them to refine their teaching methodologies over time. By leveraging Fullan's principles of change, education stakeholders can develop structured interventions that enhance teacher readiness, ensuring long-term success in mathematics instruction and curriculum implementation.

Consensus-Building Approaches in Educational Research: The Role of the Modified Nominal Group Technique (MNGT)

Consensus-building methods play a crucial role in educational research, particularly in developing validated models that can be effectively implemented in specific educational contexts. One widely used technique for establishing expert consensus is the Nominal Group Technique (NGT), which has been applied across various fields, including curriculum design, instructional development, and pedagogical research (Thier & Mason, 2019) . The Modified Nominal Group Technique (MNGT) is an adaptation of this method that enhances the process by incorporating structured discussions, iterative voting, and expert validation (Srivastava et al., 2019). This technique is particularly useful for model evaluation, where a structured approach is required to refine and validate components of a conceptual framework (Hertzum, 2016). Research has shown that MNGT is an effective tool for systematically gathering expert

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opinions, prioritizing elements, and establishing a consensus that is both rigorous and applicable in real-world settings (Allen et al., 2004; Van De & Delbecq, 1971).

The use of MNGT in educational model development typically involves multiple phases, including expert selection, structured discussions, and iterative prioritization of elements (Yahaya et al., 2020). Studies employing this method have demonstrated its effectiveness in refining and validating various educational models, such as those related to curriculum innovation, instructional strategies, and professional competency frameworks (Dobbie et al., 2004; Saleh, 2016). For instance, Saleh (2016) utilized MNGT to assess the feasibility and effectiveness of an inquiry-based history teaching model, while Mohd Sidi (2018) employed this approach to validate a holistic competency assessment model in technical and vocational education. Similarly, Atkins et al. (2015) highlighted the benefits of combining focus group discussions with NGT to enhance student evaluation processes. The structured nature of MNGT ensures that diverse expert opinions are captured systematically, reducing bias and increasing the reliability of findings.

In the context of mathematics education, the application of MNGT is critical in developing teacher readiness models, as it allows experts to systematically identify and prioritize key elements related to professional knowledge and pedagogical skills. By integrating both quantitative and qualitative insights, this method provides a comprehensive approach to model validation, ensuring that the framework developed is practical, contextually relevant, and aligned with the evolving needs of teachers (Jaya et al., 2021). Previous studies, such as those by Sahrir et al. (2012) and Ellis and Levy (2010), emphasize the importance of ensuring that developed models are both usable and effective within their intended educational settings. The iterative nature of MNGT allows for continuous refinement, ensuring that teacher readiness frameworks remain adaptable and applicable in dynamic classroom environments. Thus, employing MNGT in mathematics education research contributes to a more structured and reliable approach to developing evidence-based models that support teacher preparedness and instructional effectiveness.

Methodology

The methodology section outlines the research design, data collection methods, expert selection process, and data analysis techniques used to develop a Mathematics Teacher Readiness Model based on professional knowledge and pedagogical skills. This study employs the Modified Nominal Group Technique (MNGT) to achieve expert consensus in identifying and prioritizing key elements of teacher readiness.

Expert Selection and Sampling

In this study, mathematics teachers were selected as field experts to participate in the Modified Nominal Group Technique (MNGT) process. The selection criteria were adapted from Adams et al. (2022)), who emphasized the importance of selecting individuals with specialized knowledge and expertise in the field of study. Backhouse et al. (2022) further defined experts as those who possess both theoretical and practical experience in their domain. To ensure the credibility and reliability of the consensus-building process, experts in this study were chosen based on the following criteria:

i. Field of Expertise: Participants were experienced mathematics teachers actively engaged in instructional practices.

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ii. Academic Background: All experts had an educational background in mathematics and were well-versed in curriculum implementation.
iii. Qualification: Participants held either a bachelor's degree or a master's degree in mathematics education, ensuring their theoretical and pedagogical competence.
iv. Years of Experience: The experts had a minimum of 10 years of experience in mathematics education, which aligns with best practices in expert panel selection.
v. Professional Engagement: All participants were actively involved in mathematics programs, curriculum development, and professional activities related to mathematics education.

A total of 16 experts, all of whom were mathematics teachers, were recruited for this study. The selection process followed recommendations from Van De and Delbecq (1971), who suggested that between 5 to 9 experts are appropriate for data collection using the NGT approach, while larger expert panels are often utilized for model validation (Mohd Amir Izuddin et al., 2022). The inclusion of 16 experts allowed for a diverse yet highly specialized panel, ensuring comprehensive discussions and well-informed consensus on key elements of mathematics teacher readiness. Experts were invited through targeted recruitment from schools, universities, and mathematics education associations, ensuring a balanced representation of both theoretical knowledge and practical classroom experience. This rigorous selection process enhances the validity of the findings and contributes to the development of a robust and empirically validated teacher readiness model.

Study Procedure

The current study uses the Modified Nominal Group Technique (MNGT) to gain insights into expert consensus on the development of a Mathematics Teacher Readiness Model based on professional knowledge and pedagogical skills. The data collection process was conducted through a structured workshop session, where experts participated in a series of discussions, evaluations, and rankings. The procedure was guided by established MNGT steps (Lloyd-Jones et al., 1999; Perry & Linsley, 2006; Varga-Atkins et al., 2015), ensuring a systematic and reliable consensus-building approach. The key steps of the study procedure are as follows:

i. ***Presentation and Explanation of the Study***
The session began with a detailed presentation on the objectives, methodology, and expected outcomes of the research. The facilitator provided an overview of the Mathematics Teacher Readiness Model, explaining the theoretical framework and key constructs derived from the literature review.

ii. ***Clarification and Discussion***
Experts were allowed to seek clarification and discuss the proposed model. This step ensured that all participants had a clear understanding of the model components before proceeding to the consensus-building process.

iii. ***Idea Sharing and Expert Input***
During this phase, experts shared their perspectives, provided insights, and suggested modifications to the model. A structured brainstorming approach was implemented, allowing each expert to contribute systematically without the influence of dominant opinions. The questionnaire used in this study employed a 7-point Likert scale, enabling experts to rate the importance and relevance of each component in the proposed model.

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iv. ***Voting and Ranking Process***
Experts individually rated and ranked the key elements of the model using a 7-point Likert scale questionnaire. The voting process was conducted anonymously to ensure unbiased results and to allow independent expert judgement. The agreement and suitability value assigned by each expert provided a score for each evaluated element. These scores were then converted into percentages to determine whether the evaluated elements were suitable for inclusion in the final model.
A usability percentage higher than 70% was set as the acceptance criterion, following the guidelines established by Deslandes et al. (2010) and Dobbie et al. (2004). According to Deslandes, Mendes, Pires, and Campos (2010), an element is considered valid only if it achieves a score percentage equal to or greater than 70%. By retaining only elements with strong expert agreement, this criterion enhanced the validity and applicability of the model.

v. ***Presentation of Findings and Final Consensus***
The results of the ranking and scoring were presented to all experts. The facilitator highlighted key agreements, discrepancies, and suggested refinements based on the expert evaluations. Further discussion resolved any remaining inconsistencies, resulting in the finalisation of the Mathematics Teacher Readiness Model. By following this structured MNGT-based workshop process, the study ensured that the final model was not only empirically validated but also practical for mathematics education.

Findings

The results obtained from the Modified Nominal Group Technique (MNGT) demonstrate a high level of consensus among experts regarding the suitability and usability of the Mathematics Teacher Readiness Model. The findings are summarized as follows:

Suitability of Main Components in the Model

To ensure the effectiveness of the Mathematics Teacher Readiness Model, its core components were evaluated based on expert consensus. A structured assessment of four key components; mathematics teacher readiness, professional knowledge, pedagogical skills, and mathematics teaching and learning was conducted using the Modified Nominal Group Technique (MNGT). The results indicate that all components surpassed the usability threshold of 70%, with expert evaluations confirming their relevance and applicability in mathematics education. These findings reinforce the model's validity as a structured framework that supports teachers in improving professional competencies and instructional effectiveness

Table 1: Findings of Modified Nominal Group Technique: Suitability of Main Components in the Model

Main Component	Total Score (N=16)	Percentages %	Evaluation Status
Mathematics Teacher Readiness	100	89.29	Suitable
Professional Knowledge	103	91.96	Suitable
Pedagogical Skills	103	91.96	Suitable
Mathematics Teaching and Learning	104	92.86	Suitable

Notes: Acceptance Criterion: Usability Percentage ≥ 70.0%

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Table 1 presents the expert evaluation of the main components of the Mathematics Teacher Readiness Model, demonstrating high levels of agreement across all components, with scores ranging from 89.29% to 92.86%, exceeding the usability percentages. All components were deemed appropriate for inclusion in the model.

Suitability of Priority Order of Main Components and Elements in the Model

The priority order of components and elements within a model plays a crucial role in ensuring structured implementation and clarity for end-users, particularly for mathematics teachers in this study. Establishing a clear hierarchy allows educators to understand the sequence of importance in applying professional knowledge and pedagogical skills effectively. The evaluation process for this study involved expert consensus through the Modified Nominal Group Technique (MNGT), ensuring that the priority sequence was logically structured and aligned with practical application. The results in Table 2 present the evaluation of the priority order for main components and their elements, with all evaluated aspects exceeding the usability percentage of ≥ 70%.

Table 2: Findings of Modified Nominal Group Technique: Suitability of Priority Order of Main Components and Elements in the Model

Priority Order	Total Score (N=16)	Percentages %	Evaluation Status
1. Priority order for the main components of the model.	105	93.75	Suitable
2. Priority order of elements in the mathematics teacher readiness component.	104	92.86	Suitable
3. Priority order of elements in the professional knowledge component.	108	96.43	Suitable
4. Priority order of elements in the pedagogical skills component.	109	97.32	Suitable
5. Priority order of elements in the mathematics teaching and learning component.	109	97.32	Suitable

Notes: Acceptance Criterion: Usability Percentage ≥ 70.0%

Table 2 presents the evaluation of the suitability of priority order for main components and their elements within the Mathematics Teacher Readiness Model. The results show that all priority orders achieved high acceptance levels, with scores ranging between 92.86% and 97.32%, surpassing the usability percentage. This indicates that the structured prioritization of elements within the model aligns with expert consensus and is appropriate for practical implementation.

Overall Usability of the Model

The findings from the Modified Nominal Group Technique (MNGT) indicate a high level of usability and acceptance of the Mathematics Teacher Readiness Model among experts. Table 3 presents the evaluation results, which show that all components and elements of the model achieved a usability percentage exceeding 70%, meeting the established acceptance criteria.

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Table 3: Findings of Modified Nominal Group Technique: Overall Usability of the Model

	Usability of the Model	Total Score (N=16)	Percentages %	Evaluation Status
1.	The main components of the Mathematics Teacher Readiness Model as an agent of change based on professional knowledge and pedagogical skills can be used as a guideline to enhance teaching professionalism.	109	97.32	Suitable
2.	This model serves as a guideline for mathematics teachers, positioning them as effective agents of change in advancing educational concepts.	109	97.32	Suitable
3.	The model clearly outlines teacher readiness aspects according to priority, helping mathematics teachers perform their tasks efficiently.	107	95.54	Suitable
4.	The model explicitly illustrates teacher readiness in the context of professional knowledge and pedagogical skills.	110	98.21	Suitable
5.	The model highlights the importance of professional knowledge and pedagogical skills in influencing teacher behavior.	109	97.32	Suitable
6.	The model demonstrates the significance of professional knowledge in shaping teachers' instructional practices.	109	97.32	Suitable
7.	The model clarifies the importance of pedagogical skills in ensuring effective classroom management.	108	96.43	Suitable
8.	The model provides a clear framework for mathematics teachers on the integration of professional knowledge and pedagogical skills in the teaching and learning process.	110	98.21	Suitable
9.	The model is highly practical for mathematics teachers in conducting teaching and learning sessions in secondary schools.	109	97.32	Suitable
10.	The model serves as a guideline for mathematics teachers in planning, implementing, and assessing instruction in the secondary school context.	109	97.32	Suitable

Notes: Acceptance Criterion: Usability Percentage ≥ 70.0%

The highest-rated elements, scoring 98.21%, include the explicit illustration of teacher readiness in the context of professional knowledge and pedagogical skills and the clear framework for integrating these aspects in the teaching and learning process. These findings highlight that experts strongly agree on the importance of structuring teacher readiness based on these fundamental components. Similarly, the practical application of the model in secondary school mathematics teaching received a high usability score of 97.32%, demonstrating its effectiveness in real-world classroom settings.

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Other highly rated aspects include the significance of professional knowledge in shaping instructional practices (97.32%), the importance of pedagogical skills in classroom management (96.43%), and the clear prioritization of teacher readiness aspects (95.54%). These results validate the model's comprehensive structure and logical sequencing, ensuring that teachers can efficiently navigate their professional growth and instructional responsibilities.
Overall, the expert evaluations confirm that the Mathematics Teacher Readiness Model is highly usable and suitable for implementation. The consistently high usability scores across all components reinforce its practical relevance and applicability, making it a valuable framework for guiding mathematics teachers in planning, executing, and assessing their instructional practices. The findings further emphasize the importance of professional knowledge and pedagogical skills in shaping teacher effectiveness, ensuring continuous professional development and improving student learning outcomes.

Discussion

Several studies have emphasized the importance of teacher readiness in ensuring effective instructional practices and professional development. Prior research has shown that structured models, which integrate professional knowledge and pedagogical skills, are essential in guiding teachers through systematic and goal-oriented instructional changes (Kind & Chan, 2019). As mentioned in the literature, teacher readiness models should not only focus on content mastery but also on mental preparedness and belief systems, which enable teachers to respond effectively to educational transformations (Kim, 2020). The present study aligns with these findings, demonstrating that the Mathematics Teacher Readiness Model is highly usable and practical, as indicated by the ≥ 95% expert consensus on all evaluated elements.

The findings from the Modified Nominal Group Technique (MNGT) confirm that all core components of the model, including professional knowledge, pedagogical skills, and instructional effectiveness, have been validated with high usability scores. The most important result was that all elements scored above the usability threshold of 70%, with the highest rating reaching 98.21%, which supports the structured and practical nature of the model. Another striking finding is that the model clearly outlines teacher readiness priorities, providing a systematic roadmap for teachers to assess their competency levels and make informed adjustments to their teaching approaches. These results strongly reinforce previous findings by Chen et al., (2022), which suggest that structured models with clear priorities significantly enhance teachers' capacity to implement changes based on practical theories.

One interesting finding is that the model effectively serves as a self-assessment tool, allowing teachers to reflect on their readiness levels and align their teaching strategies with evolving educational demands. Another important finding is that the model not only supports lesson planning and instructional delivery but also ensures that teachers are equipped to handle real-world classroom challenges in secondary school mathematics education. The experts' high consensus on the usability of the model aligns with the perspectives of Marham et al., (2022), who argued that teacher behavior influenced by strong content knowledge and pedagogical expertise leads to significantly improved teaching and learning outcomes.

The findings of this study reinforce the practical usability of the model, as experts strongly agreed that it is suitable for real classroom implementation. The model provides a reflective tool for teachers to assess how well their skills align with current educational needs, fostering continuous professional growth. Additionally, the high usability scores support Foster et al. (2022) argument that education models should not only be theoretically sound but also

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practically adaptable to ensure their relevance in dynamic classroom settings. Given the increasing demand for structured teacher readiness frameworks, this model provides a practical solution to guide mathematics teachers in planning, executing, and evaluating their instructional effectiveness. Moving forward, further research should explore longitudinal applications of the model to assess its impact on teacher development and student learning outcomes over time.

Conclusion and Further Direction

This study provides a validated and structured framework for assessing mathematics teacher readiness as agents of change, grounded in professional knowledge and pedagogical skills. The findings from the Modified Nominal Group Technique (MNGT) confirm that the Mathematics Teacher Readiness Model is highly usable, practical, and applicable in real classroom settings, with all evaluated components exceeding the usability threshold of 95%. This strong expert consensus underscores the model's effectiveness in guiding mathematics teachers toward systematic professional growth, instructional excellence, and adaptability to evolving educational challenges.

Beyond theoretical validation, this study reinforces the practical relevance of teacher readiness models in shaping instructional effectiveness and student learning outcomes. By providing a clear, structured roadmap, this model enables teachers to self-assess, prioritize key readiness components, and refine their teaching strategies based on evidence-based best practices. The alignment of these findings with existing literature, including the works of Kind & Chan (2019), Kim (2020), and Chen et al. (2021), further supports the critical role of structured teacher development models in modern education.

The implications of this study extend beyond individual teacher growth to wider educational transformation, where mathematics educators are empowered to embrace change, innovate their teaching practices, and enhance student engagement. Given the increasing complexity of educational demands, this model offers a scalable and adaptable solution that can be integrated into teacher training programs, curriculum planning, and instructional policymaking.

Moving forward, future research should explore longitudinal applications of this model to assess its long-term impact on teacher development and student achievement. Additionally, expanding its application across different educational contexts and disciplines will further validate its versatility and effectiveness. Ultimately, this study reinforces the urgent need for structured, evidence-based teacher readiness frameworks that not only enhance professional competencies but also position teachers as leaders of transformative change in education.

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