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Designing an Effective Grammar Curriculum: A Fuzzy Delphi Analysis of Content, Pedagogy, Assessment and Technology Integration in Malay Language Education

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Abstract

This study aims to examine the effectiveness of grammar instruction among Malay language teachers in primary schools using the Fuzzy Delphi Method (FDM). The study focuses on identifying crucial components that support effective grammar teaching, such as teacher's content knowledge, pedagogical strategies, the use of teaching aids (ABM), and classroom interaction. A panel of experts in Malay language education took part in several rounds of evaluation within the FDM framework until a consensus or shared agreement was reached. The results suggest that that a teacher's strong command of grammar content is the most significant and impactful factor in ensuring effective instruction, alongside with the use of interactive teaching methods, appropriate utilization of teaching aids, and student engagement in learning. Additionally, approaches like the 5E Instructional Model and the Flipped Classroom strategies were found to strengthen students' comprehension of grammar concepts. The integration of technology into the teaching and learning process further enrich grammar lessons by multiplying the engagement and interactivity. This study emphasizes the need for continuous professional development for teachers to refine their grammar proficiency and embrace innovative teaching methods. Furthermore, it recommends that policymakers revisit the existing grammar curriculum to emphasize contextual and communicative approaches. Furthe research might focus on experimental and longitudinal studies to explore the long-term impact of these strategies on grammar education.

Keywords: Grammar Instruction, Fuzzy Delphi Method, Pedagogical Strategies, Teaching Aids, Malay Language Curriculum

Introduction

Students improve their foundation in using and constructing sentences when studying grammar. The main reason teaching grammar in primary-level Malay language classes is

challenging is that teachers provide instruction in different ways. A few teachers use classical rules and request students to rehearse and remember, while others want students to communicate and lead their progress (Casas, Comajoan, & Santolària, 2020). Despite having a lot of teaching strategies to choose from, people aren't sure which ones work the best (Wishart, Oakley, & Shand, 2023).

Evidence gathered by Bataineh and Al-Dolat (2024) indicates that the way teachers feel about their knowledge, the materials they select, and the amount of technology in their curriculum lead to the success of grammar teaching. Teachers who do not feel self-assured in grammar usually use standard books, skipping input from digital teaching resources (Cushing & Helks, 2021). As a result, media lessons make it challenging for students to learn grammar topics effectively.

As curriculum reforms continue and technology has a bigger role in education, we should find better ways to teach grammar that fit modern lessons. Students seem more engaged when learning methods such as the 5E Instructional Model are used (Bataineh & Al-Dolat, 2024). Experts led by Wishart et al. (2023) also showed that making grammar lessons about concepts helps students better use grammar in real situations.

This research uses the Fuzzy Delphi Method (FDM) to examine how well different methods for teaching grammar are used by Malay language teachers in primary schools. The approach identifies the main features that lead to effective teaching of grammar through expert agreement. Authorities believe that the outcomes of the study can help teachers and policymakers improve grammar instruction for children in the classroom.

Literature Review

Grammar education has developed greatly over time, placing greater importance on letting students participate in their lessons. Chandran et al. (2022) studied Malaysia's grammar teaching. They found that the typical challenges were a massive workload for teachers, a lack of specialised training, and the use of old and less interesting teaching tools. This study pointed out that these problems hold back effective grammar teaching and reduce students' chances of correctly understanding grammar.

For this reason, studies have examined how adding interactive materials can improve grammar teaching. Using the Omygram Learning Chart seems to improve students' understanding of basic grammar concepts and leads to a stronger desire to study (Hamid et al., 2022). This shows again that graphic and interactive tools are important for keeping students' interest in grammar classes.

Worldwide, educators are finding Flipped Classroom to be a successful method for teaching grammar. In the study by Shaari et al. (2021), it was found that teaching grammar through digital tasks helped students learn grammar better, develop personal study skills and actively participate in class discussions. Before class, students are given information about grammar so that teachers can use class time for activities, group work and practical examinations.

Concept-based instruction (CBI) is a commonly explored method whose main concern is teaching students to understand concepts instead of simply remembering facts. As expected,

research by Harun et al. (2019) discovered that students using a conceptual approach to grammar improve their ability to understand and use it.

Technology has been well-studied when it comes to grammar instruction. The work of Bataineh and Al-Dolat (2024) hints that using the 5E Instructional Model in grammar classes improves how students participate and learn by exploring. Deng and Chen (2024) also examined blended learning, in which grammar learning benefits from AI and big data to create unique student experiences.

Existing research shows that effective grammar instruction should use communication, take advantage of technology and provide interactive resources. With these findings in mind, this work will investigate how different methods of grammar teaching are performed in Malay language classrooms using the fuzzy Delphi method (FDM). This study sets out to find important factors that support successful grammar teaching and will help educators improve primary school grammar education.

Research Methodology

The Fuzzy Delphi method was used to gather expert agreement on the main factors for successful grammar instruction in the Malay language for primary school teachers. All responses were collected through interviews, providing a lengthy view into instructors' thoughts on grammar pedagogy, strategies, and technology. This study uses FDM, guaranteeing that the collected data are analysed adequately for stronger results (Wishart, Oakley, & Shand, 2023).

Those chosen to participate are recognised experts in Malay language education, who were selected using purposive sampling to guarantee their practical knowledge and experience in teaching grammar. The people involved are university lecturers teaching grammar, Malay language teachers with more than a decade in teaching and Ministry of Education Malaysia officers who design lessons for the Malay language. This means the ideas found in our study result from expert opinions that blend charges theory with actual classroom practice (Collins & Ruivivar, 2021).

We gathered the data in three main ways. Detailed views on grammar teaching, common classroom problems, and solutions were obtained from selected experts in semi-structured interviews. A Fuzzy Delphi questionnaire was also built using earlier studies to help refine the list of important instructional elements and get agreement from experts (Shaari et al., 2021). Alongside these findings, lesson plans and teaching materials were reviewed to study how grammar instruction happens now in class.

The findings were made through multiple rounds of Fuzzy Delphi to ensure they were comprehensive and validated. For the initial round, experts received a list of basic ideas thought to be key for teaching grammar, as found in the literature review. Expert answers from the second round were examined using Triangular Fuzzy Numbers (TFN) to rate the importance of each feature. In the last round, experts checked the carefully trimmed data and agreed the threshold (d) was achieved if d was less than or equal to 0.2 (Vovk & Pashis, 2023). Because of the iterative approach, the essential aspects, as determined by experts, were included in the final look at the data.

This study used thematic analysis to find common patterns and themes in what the experts had to say about teacher and principal practices. The NVivo software was used to methodically structure and study the data collected from interviews and examined in the documents. Furthermore, a Fuzzy Delphi analysis was done, and the values were defuzzified to identify the most critical factors affecting grammar instruction success (Collins & Ruivivar, 2021).

All research steps were guided by ethical considerations. Before any research took place, research activities were examined and backed by consent from suitable organizations. Study participants were encouraged by assurances that their data remained confidential, and nobody could access the information they shared (Yong et al., 2021).

The research uses this approach to evaluate grammar teaching in Malay language schools with reliable findings. Fuzzy Delphi lets us systematically collect experts' views, resulting in practical plans for upgrading teaching strategies in primary school grammar lessons. The goal is for this research to benefit efforts to strengthen grammar lessons so that learners can better engage in and benefit from them.

Findings

Based on the Fuzzy Delphi Method (FDM) study, strong insights are gained on the characteristics of successful grammar instruction. Using TFNs and a defuzzification process, the researchers identify essential factors with support from experts. The analysis found that teacher knowledge of the subject is the main factor, achieving a defuzzification score of 0.83. The research shows that excellent teaching starts with a well-developed understanding of grammar on the part of the teacher. Collins and Ruivivar (2021) found that better knowledge of grammar in teachers makes it easier for them to adjust their teaching to fit what students learn.

The next most crucial factor is pedagogical strategies, which earned a defuzzification score of 0.79. Experts thought that Concept-Based Instruction (CBI) and the Flipped Classroom were two teaching strategies that make students want to learn grammar rules more. These methods allows students focus on learning. By doing so, they can truly interact with grammar. Harun er al. (2019) also supports this finding that conceptual grammar helps students use grammatical rules in daily conversations. Alaa et al. (2019) believe that teachers' abilities to use effective teaching methods should be maintained by providing plenty of professional development.

The Fuzzy Delphi analysis conducted in this study provided quantitative validation for these key elements. Table 4.1 presents the Triangular Fuzzy Numbers (TFN) values for the factors influencing grammar instruction effectiveness:

Table 1
Triangular Fuzzy Numbers (TFN) Values for Grammar Teaching Effectiveness Elements

Element	Min (m1)	Mod (m2)	Max (m3)	Defuzzification	Priority
Teacher Content Knowledge	0.75	0.85	0.90	0.83	1
Pedagogical Strategies	0.70	0.80	0.88	0.79	2
Use of Teaching Aids (ABM)	0.65	0.75	0.85	0.75	3
Interaction in Learning	0.60	0.72	0.82	0.71	4

Identifying ABM use as necessary involved a defuzzification score of 0.75. Visuals and interactive tools greatly help students understand abstract grammar ideas. According to experts, interesting resources for learning grammar, such as the Omygram Learning Chart, can help students remember grammar and feel more motivated (Hamid et al., 2022). Still, while using teaching aids is good, they work best when they fit well into the overall plan for the lesson. Another study conducted by Bataineh & Al-Dolat (2024) found that using technology in teaching boosts grammar understanding only when you add well-structured pedagogical ideas.

Students' interaction in the classroom was given an essential score of 0.71. According to the study, participation in discussions, peer collaboration and working on problem-solving activities improve students' grammar comprehension. This result fits well with Bandura's Social Learning Theory (1986) that students learn better if they observe, copy and interact with others. Collaborative activities in learning grammar seem to work better than lectures in helping students learn and put rules into practice.

The results also align with several approaches to the study of learning language. Teaching in this way follows Vygotsky's theory, which suggests that when teachers help students interact, they can support their learning. Moreover, teaching grammar with technology fits with Information Processing Theory (Atkinson & Shiffrin, 1968), which claims that multimodal methods make it possible for students to remember and use grammar rules better (Deng and Chen, 2024). They give us a reasonable basis for knowing what instructional practices best support grammar learning.

The primary outcome of this research is that teachers, their strategies, teaching resources and classroom activities are essential for good grammar instruction. All these things contribute to a student's success, but their benefits are most significant when all are used together and centred on the students. Teachers should use these outcomes as a reminder to keep improving their skills, mix technology into learning and involve learners in interactive classes. Using these techniques in working with grammar makes lessons more interesting and helps students meet 21st-century learning goals.

Conclusion

Results from this study suggest ways to enhance both teaching and the curriculum in grammar instruction for primary schools. Results indicate that understanding the subject is the most important influence on student results in learning grammar. As a result, we should create continuous development programs that give teachers better knowledge of grammar matters

and the skills to teach more effectively. Research by Wishart et al. (2023) supports this, emphasizing that teachers with a strong grasp of grammar are more likely to adopt a diverse range of pedagogical approaches that engage students in meaningful learning experiences. Even so, teachers often struggle to find suitable strategies and tools, highlighting the promise of organized training on this topic.

It's important to understand that strategies for teaching grammar are crucial. Evidence proves that Flipped Classroom and Concept-Based Instruction (CBI) are highly successful strategies for increasing students' enjoyment and understanding of their learning. When they developed activity-based strategies, they started interacting with grammar topics in ways that matter more. Another study demonstrates this perspective, Harun et al. (2019) note that teachers must continue receiving support and instruction for approaches to work well. Teachers who receive little professional development will likely not use these approaches effectively.

The role of teaching aids (ABM) can be important for grammar lessons too. Results indicate that students learn complex grammar better with visual, interactive and digital techniques. According to Hamid et al. (2022), the Omygram Learning Chart makes it easier for students to remember grammar ideas and remain motivated. At the same time, teaching aids are helpful, but picking and using them carefully is essential to support the learning aims. The study by Bataineh & Al-Dolat (2024) indicates that the benefits of using technology to learn grammar are greatest when teaching principles are used correctly. For teaching aids to work well, educational systems should buy good instructional resources and help teachers know how to use them.

Students' interactions with each other in the classroom strongly affects grammar learning. Students gain the most from lessons when interacting with other students, engaging in group activities and practising finding answers independently. This supports Bandura's Social Learning Theory (1986), which holds that students gain a better understanding when they see and engage with those around them. Traditional ways of teaching grammar tend to centre on lectures by teachers rather than practice exercises. For these reasons, teachers should use more activities that involve students working together, reviewing each other's work and debating to draw students' interest.

In light of these findings, these results suggest some valuable suggestions on improving grammar instruction. Instead of having students remember grammar points, teachers should guide them to think about and test these ideas differently. Bataineh and Al-Dolat (2024) have observed that the 5E Instructional Model (Engagement, Exploration, Explanation, Elaboration, and Evaluation) encourages students to improve their thinking and grammar knowledge in classes. Moreover, teachers should use apps for languages, multimedia elements and computer grammar tools to make lessons more interesting and suited to each student (Deng & Chen, 2024).

The results imply that curriculum reviewers and policymakers should focus more on communicative and contextual grammar teaching rather than just traditional grammar instruction. Sticking too firmly to rules may not help students prepare well for speaking in practical situations, according to Kabel (2020). As a result, classroom activities in grammar must reflect what people do with language, include actual texts and focus on how students

learn. Moreover, training courses should include teaching methods and activities to give instructors practical experience teaching new grammar methods. To do this, we offer workshops, programs for mentoring teachers and online groups where instructors exchange knowledge and strategies.

Future studies could test how students do over time with interactive grammar teaching. Besides, research may study the difference urban and rural environments make to the effectiveness of different grammar teaching techniques. Using AI and big data in grammar instruction can create new findings about using personalised learning to support all types of learners. A final kind of research should be conducted to determine the continued improvement of grammar lessons after teacher training (Wyatt & Dikilitaş, 2019).

Overall, the study emphasizes that effective grammar instruction is a multidimensional process that requires a combination of teacher expertise, pedagogical innovation, technology integration, and interactive learning strategies. By addressing these key factors, educators and policymakers can work towards developing a more engaging and effective grammar curriculum that equips students with the linguistic skills needed for academic success and real-world communication.

Theoretical and Practical Implications

In the context of teaching grammar in the Malay language, this study makes a substantial theoretical and practical contribution. The results theoretically corroborate Vygotsky's (1978) sociocultural approach and Bandura's (1986) social learning model, which both stress that social interaction and contextual support are key components of optimum learning. The efficacy of cognitive and constructivist theories in language acquisition is demonstrated by the 5E instructional model and the Concept-Based Instruction (CBI) approach supported in this study (Bataineh & Al-Dolat, 2024; Harun et al., 2019).

Practically, the results indicate that teachers need to be well-versed in grammar and employ successful teaching techniques like the Flipped Classroom model and interactive teaching tools. To improve student involvement, teachers are also urged to carefully and methodically incorporate technology into grammar instruction (Deng & Chen, 2024; Collins & Ruivivar, 2021). The study's conclusions could have an impact on educational policy, namely on professional teacher preparation programs and grammar curriculum design.

Limitations and Future Research

Despite using the Fuzzy Delphi approach to generate reliable data, this study has a number of drawbacks that should be noted. First off, the survey only included a small number of education officers and professional teachers; as a result, its conclusions might not accurately reflect all Malay language instructors in Malaysia. Second, the approach prioritised expert opinions over actual student performance data.

To assess the long-term effects of grammar teaching methods on student accomplishment, future research could concentrate on experimental or longitudinal studies. The usefulness of these methods in rural versus urban settings should also be investigated, as should the possibilities of cutting-edge technology like artificial intelligence (AI) and adaptive learning in grammar teaching (Wyatt & Dikilitaş, 2019; Rahman & Wahid, 2023).

Additional research might examine how rigorous teacher preparation affects the application of suggested teaching techniques and assess long-term improvements in instruction and student comprehension (Wishart, Evans, & Carter, 2023). This is necessary to guarantee the comprehensive efficacy of the grammar curriculum change.

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