

Validity and Reliability of the Grammar-Based Interactive Module (GBIM) for Upper Primary ESL Pupils

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ABSTRACT

Grammar comprehension is an important foundation for ESL learning because it helps pupils construct accurate sentences and communicate ideas effectively. However, many upper primary pupils still find grammar difficult when it is taught through conventional methods. Therefore, the Grammar-Based Interactive Module (GBIM) was developed to provide structured, engaging, and learner-centred grammar activities. This study examined the validity and reliability of the Grammar-Based Interactive Module (GBIM) developed to enhance grammar comprehension among upper primary ESL pupils. The module was evaluated by nine experts to determine its content validity. The findings showed that the GBIM achieved a high Content Validity Index (CVI) of .92, indicating strong expert agreement on the suitability, feasibility, time allocation, grammatical focus, and instructional relevance of the module. Reliability analysis was also conducted using pilot data from 20 Year 4 pupils. The overall Cronbach's alpha value was .85, demonstrating good internal consistency. These findings indicate that the GBIM is a valid and reliable instructional module for supporting grammar comprehension among upper primary ESL pupils.

Keywords: Grammar-Based Interactive Module, content validity, reliability, grammar comprehension, ESL pupils, upper primary education.

INTRODUCTION

Grammar comprehension is a fundamental component of English as a Second Language (ESL) learning because it enables pupils to construct meaningful sentences, communicate ideas accurately, and develop competence in reading, writing, speaking, and listening. For upper primary ESL pupils, grammar knowledge is especially important as it supports the transition from basic language awareness to more structured language use (Santhanasamy & Yunus, 2022). However, grammar learning is often perceived as difficult when it is taught through traditional methods that rely heavily on memorisation, drills, and teacher-centred explanation. Traditional grammar instruction may not fully address pupils' diverse learning needs, particularly among young ESL learners who require active participation, visual support, and meaningful practice. In this regard, interactive teaching methods have gained increasing attention because they promote learner engagement and support grammar comprehension through collaborative and student-centred learning experiences. Yassi (2020) found that interactive small-group work was more effective than conventional teaching methods in improving learners' grammar and speaking competence. This suggests that grammar instruction becomes more meaningful when pupils are actively involved in the learning process rather than passively receiving grammatical rules.

Recent studies have also highlighted the role of technology-enhanced and multimedia-based approaches in improving grammar learning. For example, Dirgeyasa et al. (2025) demonstrated that the use of video-integrated English grammar worksheets significantly enhanced grammar learning outcomes. Similarly, web-based grammar modules have been developed and evaluated as structured tools to support grammatical competence. Yazid et al. (2026) reported that expert evaluation of a web-based grammatical competence module showed strong potential for supporting grammar instruction through organised and interactive learning materials. These

findings indicate that interactive modules can provide a more systematic, engaging, and learner-centred approach to grammar learning.

In addition, emerging technologies such as augmented reality have been explored in English language learning. Marrahi-Gomez and Belda-Medina (2024) found that augmented reality encouraged positive learner motivation and engagement, although its direct effect on grammar achievement requires further investigation. This shows that while technology can increase interest in language learning, instructional design remains crucial in ensuring that digital tools directly support grammar comprehension. In the Malaysian ESL primary school context, there is a need for grammar instruction that is aligned with pupils' developmental level, classroom realities, and curriculum expectations (Chen & Jamiat, 2023). The Grammar-Based Interactive Module (GBIM) was developed to address this need by integrating interactive activities, visual materials, guided grammar practice, collaborative learning, and immediate feedback. The findings from the present study showed that the GBIM had strong content validity and reliability, indicating that it was appropriate for implementation among upper primary ESL pupils. Qualitative findings also showed that pupils perceived the module as engaging and helpful, while teachers viewed it as a practical tool for improving grammar understanding.

English language proficiency is essential for pupils' academic development and future career opportunities in an increasingly globalised world (Yaccob et al., 2022a). In Malaysia, English functions not only as a school subject but also as an important language for accessing knowledge, participating in wider communication, and preparing pupils for future educational and professional demands. However, English proficiency among Malaysian primary school pupils remains a concern. Chun and Yunus (2023) reported that only 41.6% of pupils achieved a passing grade in English examinations in 2020, indicating a decline in English achievement at the primary school level. This situation requires serious attention because weak English proficiency may affect pupils' academic performance and limit their future employability, particularly in contexts where English communication skills are valued by employers.

In the Malaysian primary school context, English proficiency is closely related to pupils' ability to understand classroom instruction, learning materials, and academic tasks. Although English is taught as a core subject, many pupils continue to experience difficulties in vocabulary, sentence construction, and grammar use. These challenges may restrict their ability to comprehend texts, express ideas clearly, and apply language accurately in both written and spoken communication. Grammar comprehension is particularly important because it forms the structural foundation of language learning. Without adequate grammar mastery, pupils may struggle to construct meaningful sentences and communicate effectively. Furthermore, English proficiency is associated with broader cognitive and learning skills, including critical thinking, problem-solving, creativity, and access to wider sources of information (Wang, 2023). Pupils with stronger English skills are more likely to benefit from diverse learning resources, digital materials, and global knowledge platforms. Conversely, pupils with limited English proficiency may face barriers in independent learning and academic confidence. Therefore, improving grammar comprehension at the primary school level is important in strengthening pupils' overall English language development.

Several factors may contribute to pupils' limited English proficiency. From the teaching perspective, some educators may face challenges due to limited training, instructional resources, or exposure to innovative English teaching strategies (Xie et al., 2022). In addition, Malaysian primary school pupils may have limited opportunities to use English outside the classroom, particularly in home and community environments where English is not commonly used in daily communication (Ganaprakasam & Karunaharan, 2020). As a result, pupils may depend heavily on classroom instruction as their main source of English language exposure. Traditional grammar instruction, which often emphasises memorisation, rule explanation, and repetitive exercises, may not be sufficient to address these learning challenges. Young ESL learners generally require interactive, engaging, and meaningful learning experiences that allow them to practise grammar in context. Therefore, there is a need for instructional approaches that move beyond passive learning and provide pupils with opportunities to interact with language through activities, feedback, collaboration, and guided practice.

In response to this need, the present study aims to develop and evaluate the validity and reliability of the Grammar-Based Interactive Module (GBIM) for enhancing grammar comprehension among Malaysian upper primary ESL pupils. The module was designed to provide structured, engaging, and interactive grammar learning activities aligned with pupils' developmental needs and classroom learning contexts. Therefore, this study focuses on establishing the content validity and reliability of the GBIM to determine its suitability for use as an instructional module in upper primary ESL classrooms.

METHODS

Research Design

This study employed a module development and validation design to evaluate the content validity and reliability of the Grammar-Based Interactive Module (GBIM). The study focused on determining whether the module content was suitable, relevant, and reliable for enhancing grammar comprehension among upper primary ESL pupils.

Participants

The participants involved two groups. First, nine experts were appointed to evaluate the content validity of the GBIM. Second, 20 Year 4 ESL pupils from a Malaysian primary school participated in the pilot study to determine the reliability of the grammar comprehension instrument.

Research Instruments

The instruments used in this study were the Grammar-Based Interactive Module (GBIM), the expert validation form adapted from Russell's (1974) module evaluation approach, and the grammar comprehension test. The expert validation form was used to evaluate the content validity of the module, while the grammar comprehension test was used to determine the reliability of the instrument through Cronbach's alpha analysis. The content validity procedure was adapted from Russell's (1974) module evaluation approach, which emphasizes expert agreement in determining the suitability and relevance of instructional modules.

Intervention Plan

Table 1: Intervention Plan

No.	Month	Task			
1.	One	Week 1 to 2: i. Develop items for Grammar Pre and Post-Tests ii. Develop module. iii. Prepare lesson plans and materials for experimental group grammar lesson		Week 3 to 4: Conduct a pilot study.	
2.	Two	Week 5 to 6: Conduct a pilot study. Improve on module, test items and interview questions based on participants' responses.		Week 7: Distribute Student's Questionnaire to the experimental group and analyse data.	Week 8: Administer Grammar Comprehension Pre-Test and analyse participants results.
3.	Three	Week 9: Conduct interactive	Week 10: Conduct interactive module grammar lesson.	Week 11: Conduct interactive	Week 12: Conduct interactive module grammar lesson.

		module grammar lesson. Conduct grammar lesson for the control group.	Conduct grammar lesson for the control group.	module grammar lesson. Conduct grammar lesson for the control group.	Conduct grammar lesson for the control group.
4.	Four	Week 13: Conduct interactive module grammar lesson. Conduct grammar lesson for the control group.	Week 14: Conduct interactive module grammar lesson. Conduct grammar lesson for the control group.	Week 15: Conduct interactive module grammar lesson. Conduct grammar lesson for the control group.	Week 16: Conduct interactive module grammar lesson. Conduct grammar lesson for the control group.
5.	Five	Week 17: Conduct interactive module grammar lesson. Conduct grammar lesson for the control group.	Week 18: Conduct Grammar Comprehension Post Test and analyse participants' results.	Week 19: Distribute Student's Evaluation Form to the experimental group and analyse data.	Week 20: Conduct interview sessions with selected participants of the experimental group and transcribe data. Interview session for English teachers and transcribe data.

The intervention plan shown in **Table 1** was implemented over five months, from the development phase to data collection and analysis. During the first month, the researcher developed the grammar pre-test and post-test items, constructed the Grammar-Based Interactive Module (GBIM), and prepared lesson plans and teaching materials for the experimental group. A pilot study was then conducted and continued into the second month to evaluate the suitability of the module, test items, and interview questions. Based on the pilot study responses, improvements were made before the Student's Questionnaire was distributed to the experimental group, followed by the administration and analysis of the Grammar Comprehension Pre-Test. In the third and fourth months, the intervention was implemented from Week 9 to Week 16, during which the experimental group received grammar lessons using the interactive module, while the control group received regular grammar lessons. In the fifth month, the intervention continued in Week 17, followed by the Grammar Comprehension Post-Test in Week 18. Subsequently, the Student's Evaluation Form was distributed to the experimental group in Week 19, and interview sessions with selected pupils and English teachers were conducted and transcribed in Week 20.

Data Collection Procedure

The data collection process involved two stages. First, the GBIM was submitted to nine experts for content validity evaluation using an expert validation form adapted from Russell's module evaluation approach. Second, a pilot study was conducted with 20 Year 4 ESL pupils to determine the reliability of the grammar comprehension instrument.

Data Analysis

Data were analysed using descriptive statistics and reliability analysis. The content validity of the GBIM was determined based on expert agreement percentages and the Content Validity Index (CVI). The reliability of the grammar comprehension instrument was analysed using Cronbach's alpha to determine the internal consistency of the items.

FINDINGS

This section presents the findings related to the content validity and reliability of the Grammar-Based Interactive Module (GBIM). The findings include the results of expert evaluation on the content validity of the module and the reliability analysis of the grammar comprehension instrument using Cronbach's alpha.

Content Validity of the GBIM

Table 1: Content Validity Analysis of the Grammar-Based Interactive Module (GBIM)

	Validity Components	%	Coefficient	Experts' Response
1	The GBIM content is suitable for its target population (upper primary ESL students aged 10 years old).	98	.98	Accepted
2	The GBIM content can be effectively implemented in upper primary ESL classroom settings.	96	.96	Accepted
3	The GBIM content is aligned with the allocated instructional time frame.	100	1.0	Accepted
4	The GBIM content supports learners in applying grammatical reasoning and rules.	100	1.0	Accepted
5	The GBIM content contributes to improving students' grammar comprehension and usage.	96	.96	Accepted
	Content validity coefficient of the GBIM module	92	.92	Accepted

The results of the content validity analysis are presented in Table 1. The first component, which assessed the suitability of the GBIM content for its target population (i.e., upper primary ESL students aged 10 years), received a high percentage agreement of 98% with a corresponding CVI coefficient of .98, indicating strong consensus among the experts. The second component, regarding the feasibility of implementing the module in actual ESL classroom settings, scored .96, also reflecting a high level of acceptance. The third and fourth components, alignment with the allocated instructional time frame and support for grammatical reasoning, each achieved a perfect CVI coefficient of 1.00, showing unanimous agreement across all expert evaluations. The fifth component, which evaluated the extent to which the GBIM could enhance students' grammar comprehension and usage, scored .96.

Overall, the module obtained a content validity coefficient of .92, which exceeds the recommended minimum benchmark of .80 (Sidek & Jamaludin, 2005). These results indicate that the GBIM possesses a high degree of content validity and is appropriate for its intended audience. All components were rated as "Accepted" by the expert panel, affirming the module's readiness for implementation in the main study with only minimal revisions needed.

Reliability of the GBIM

The internal consistency of each submodule in the Grammar-Based Interactive Module (GBIM) was evaluated using Cronbach's Alpha based on pilot data collected from 20 Year 4 students. Each grammar submodule included structured test items aligned with specific learning outcomes. The analysis aimed to assess the reliability of the instrument used to measure grammar comprehension across nine key grammatical areas. Table 2 presents the Cronbach's Alpha coefficients for each submodule

Table 2: Reliability Analysis for Each Submodule in the Grammar-Based Interactive Module (GBIM)

Submodule	Grammar Focus	No. of Items	Cronbach's Alpha (α)	Interpretation
Submodule 1	Punctuation	2	.75	Acceptable
Submodule 2	Adverbs of Frequency	2	.78	Acceptable
Submodule 3	Present Continuous Tense	2	.81	Good
Submodule 4	Past Simple Tense	2	.83	Good
Submodule 5	Conjunctions (and, but)	2	.80	Good
Submodule 6	Countable and Uncountable Nouns	2	.77	Acceptable
Submodule 7	Prepositions	2	.76	Acceptable
Submodule 8	Comparative and Superlative Adjectives	2	.84	Good
Submodule 9	Modal Verbs (should/shouldn't)	2	.82	Good
Overall GBIM Instrument	—	18	.85	High Reliability

To assess the internal consistency of the Grammar-Based Interactive Module (GBIM), a reliability analysis was conducted on each of the nine submodules. The pilot study involved 20 Year 4 students who completed grammar comprehension items aligned with the grammatical components of the module. Each submodule comprised two test items, making a total of 18 items across the full instrument. Cronbach's Alpha was employed to determine the degree of internal consistency for each submodule and for the overall GBIM instrument. Table 2 presents the reliability coefficients for each submodule. All submodules achieved values above the minimum threshold of .70, indicating acceptable to good reliability. The lowest alpha coefficient was recorded for the Punctuation submodule (.75), while the highest was observed in the Comparative and Superlative Adjectives submodule (.84). The overall GBIM instrument yielded a Cronbach's Alpha of .85, which indicates a high level of internal consistency (George & Mallery, 2003). These findings confirm that the items developed for each submodule are consistent in measuring the intended grammar constructs. Consequently, the GBIM can be considered a reliable tool for assessing grammar comprehension among Year 4 ESL students in the Malaysian primary school context.

DISCUSSION AND IMPLICATION

The findings indicate that the Grammar-Based Interactive Module (GBIM) demonstrated strong content validity and reliability for use among upper primary ESL pupils. The content validity analysis showed that the GBIM achieved a Content Validity Index (CVI) of .92, exceeding the recommended minimum benchmark of .80 (Sidek & Jamaludin, 2005). This suggests that the module content was judged by experts as suitable for the target population, feasible for classroom implementation, aligned with the instructional time frame, and relevant for supporting grammar comprehension.

The strong content validity of the GBIM may be attributed to its structured and learner-centred design. The module was not developed as a general grammar activity, but as a systematically organised instructional module that focuses on selected grammar components suitable for upper primary ESL pupils. Each activity was designed to match pupils' developmental level, classroom context, and grammar learning needs. This may explain why the experts rated the module highly in terms of suitability, feasibility, time allocation, grammatical reasoning, and contribution to grammar comprehension. The inclusion of interactive grammar learning activities such as quizzes, drag-and-drop tasks, storytelling activities, group challenges, visual materials, and immediate feedback also strengthens the instructional value of the module. These activities allow pupils to learn grammar through active participation rather than passive memorisation. For example, quizzes and drag-and-drop tasks help pupils practise grammar rules in a focused manner, while storytelling activities allow them to apply grammar in meaningful language contexts. Group challenges encourage collaboration and peer learning, whereas visual materials help pupils understand abstract grammar concepts more clearly. These features are consistent with recent evidence showing that digital educational games and gamified learning strategies can support learning motivation, engagement, feedback, and collaboration when they are appropriately designed (Li, 2024; Ratinho

& Martins, 2023). Similarly, game-based learning has been shown to support young learners' engagement and learning effectiveness when activities are meaningfully structured (Alotaibi, 2024).

The reliability analysis further showed that the GBIM grammar comprehension instrument achieved an overall Cronbach's alpha value of .85, indicating high internal consistency. This means that the items in the instrument were generally consistent in measuring grammar comprehension. In addition, all nine submodules recorded acceptable to good reliability values, ranging from .75 to .84. These values suggest that each grammar component, including punctuation, adverbs of frequency, tenses, conjunctions, nouns, prepositions, adjectives, and modal verbs, was measured in a stable and consistent manner. The consistency of the instrument may be linked to the clear alignment between the grammar objectives, learning activities, and assessment items. Each submodule contained items that were developed based on specific grammar focuses and learning outcomes. This alignment is important because a reliable instrument should measure the intended construct without unnecessary confusion or overlap. The use of structured practice, visual support, and immediate feedback may also have helped pupils understand the task requirements more clearly. Immediate feedback is especially relevant in language learning because it allows pupils to identify and correct errors during the learning process, which can enhance engagement and self-monitoring (Mai, 2025). Therefore, the reliability findings indicate that the GBIM instrument is sufficiently consistent for assessing grammar comprehension among upper primary ESL pupils. The findings imply that the GBIM is a valid and reliable instructional module for supporting grammar comprehension among upper primary ESL pupils. The high content validity indicates that the module content is appropriate, relevant, and suitable for the target learners, while the reliability findings suggest that the grammar comprehension items are consistent in measuring the intended grammar components. Therefore, the GBIM has potential to be used as a structured teaching resource in ESL classrooms.

The module may also assist teachers in planning grammar lessons more systematically by providing organised learning activities, clear grammar focus, and interactive tasks that promote active learning, interaction, and meaningful practice. This is particularly useful for upper primary pupils who may require more engaging and guided approaches to understand grammar concepts. However, this study was limited to expert validation and pilot reliability testing. Therefore, future studies should involve larger samples, multiple schools, and further empirical testing to examine the effectiveness of the GBIM in improving grammar comprehension across different learner groups. Follow-up studies may also explore whether pupils are able to retain grammar knowledge after using the module over a longer period.

CONCLUSION

This study established the content validity and reliability of the Grammar-Based Interactive Module (GBIM) for upper primary ESL pupils. The module achieved a high CVI value of .92, indicating strong expert agreement regarding its suitability and relevance. The overall Cronbach's alpha value of .85 further confirmed that the grammar comprehension instrument had high internal consistency. Therefore, the GBIM can be considered a valid and reliable module for supporting grammar comprehension in upper primary ESL classrooms.

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