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INSTRUMENT VALIDATION AND NEEDS ANALYSIS OF ENGLISH SIMPLE PAST TENSE LEARNING AMONG MALAYSIAN FORM 1 ENGLISH AS A SECOND LANGUAGE (ESL) STUDENTS

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Abstract:

This pilot study evaluated the content validity and reliability of a Needs Analysis Questionnaire and examined Malaysian Form 1 students' perceived learning needs, challenges, and preferences regarding English simple past tense learning and game-based grammar learning support. The questionnaire was primarily developed using Hutchinson and Waters' (1987) Necessities, Lacks, and Wants framework, while selected items in the Wants section were informed by relevant constructs from the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). Three subject matter experts (SMEs) evaluated the initial 21 substantive-item questionnaire using the Content Validity Index (CVI), yielding a Scale-Level Content Validity Index based on the average I-CVI (S-CVI/Ave) of .78. The item-level results and qualitative expert feedback were used to identify items requiring revision. Following expert feedback, unclear and double-barrelled items were reworded, simplified, and separated into single-construct statements to improve clarity and address issues identified during the expert review. The revised 28 substantive-item questionnaire was then administered to 67 Form 1 students from two government secondary schools in Kuala Lumpur. The revised 28 substantive-item questionnaire demonstrated acceptable internal consistency (Cronbach's $\alpha = .728$). Descriptive analysis indicated that the pilot respondents perceived basic past tense rules as important, reported difficulties in recognising correct past tense verb forms,

perceived memorising word lists and repetitive grammar exercises as boring, and expressed positive preferences for game-based learning features. These pilot findings provide preliminary indications for the subsequent design and development of the proposed game-based learning application, particularly regarding clear and basic past tense rules, game-based practice, user-friendly navigation, immediate feedback, and motivational features.

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Keywords:

Content Validity Index (CVI), Game-Based Learning, Malaysian ESL Students, Needs Analysis, Questionnaire Validation, Simple Past Tense



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Introduction

Grammar instruction continues to be an important area of second language learning, particularly in relation to how learners develop accurate use of grammatical forms through different instructional approaches (Ouli & Konta, 2025). In Malaysia, lower secondary students continue to face challenges in learning English grammar, which has encouraged interest in alternative instructional approaches, including technology-enhanced learning (Shukor et al., 2025). The Malaysian English curriculum has been progressively aligned with the Common European Framework of Reference for Languages (CEFR), with CEFR-aligned curriculum implementation introduced to Form 1 students in 2017 (Sukri et al., 2025; Md Nawawi et al., 2021). The CEFR provides a common framework for describing language proficiency through levels and communicative descriptors (Council of Europe, 2020).

Despite years of formal schooling, Malaysian secondary school learners continue to demonstrate difficulties with the English simple past tense, including recurrent errors of misformation, omission, and addition (Mohamad Sazali et al., 2024). First-language influence may contribute to some of these difficulties. Previous Malaysian studies have reported mother-tongue interference in English writing among learners from different linguistic backgrounds, including Malay, Chinese, and Tamil-speaking educational contexts (Mehat & Ismail, 2021; Govindarajoo et al., 2022; Nair & Krish, 2021). These findings suggest that learners' linguistic backgrounds may influence aspects of English language production, supporting the need to consider linguistic diversity when examining simple past tense learning difficulties.

To address these persistent grammar issues, technology-supported approaches have increasingly been examined for grammar learning. Digital game-based learning has been associated with improved grammar performance among English as a Foreign Language (EFL)

learners (Khan et al., 2024). Malaysian learners have demonstrated specific difficulties with the English simple past tense, including errors involving verb forms and the use of the past tense auxiliary *be* (Mohamad Sazali et al., 2024; Manokaran et al., 2013). These documented difficulties underscore the need to establish the specific grammar needs of learners in order to create a game-based learning intervention to address them. Therefore, careful needs analysis and expert validation are needed before developing a game-based grammar learning intervention. This is important to ensure that the questionnaire appropriately captures students' learning needs and provides relevant information to guide the subsequent design of the game-based grammar learning application.

Literature Review

Challenges in Past Tense Mastery Among Malaysian ESL Students

Malaysian secondary school learners have demonstrated difficulties with the English simple past tense. Corpus analysis of Malaysian secondary students' writing identified three recurring error types: omission, misformation, and addition, with misformation occurring most frequently (Mohamad Sazali et al., 2024). One contributing factor may be first-language influence, as previous research involving Malaysian ESL learners has identified verb tense and subject-verb agreement errors that may be associated with first-language (L1) interference (Mehat & Ismail, 2021). These difficulties may affect learners' ability to use the simple past tense accurately in written communication. Malaysian secondary education is aligned with CEFR-based proficiency targets, with B1 identified as an aspirational target for the secondary stage (Md Nawawi et al., 2021). As the present study focuses specifically on Form 1 students, identifying their simple past tense learning needs is important for providing appropriate support during the early stage of secondary education.

Game-Based Learning for Grammar Instruction

Grammar learning requires repeated opportunities for practice and feedback to support more accurate language use. Game-based learning can provide interactive and engaging opportunities for grammar learning and assessment (Abdul Rashid & Din, 2023). Digital game-based learning has also been associated with improved grammar performance among EFL learners (Khan et al., 2024), while gamification in language learning has been linked to learner motivation and language learning outcomes (Shen et al., 2024). Navinkumar and Sivakami (2024) reported improved grammar performance together with positive motivation and engagement among young ESL learners. In the Malaysian context, Shukor et al. (2025) examined a technology-based grammar intervention for lower secondary ESL learners, highlighting the growing use of online and technology-supported approaches in Malaysian ESL grammar teaching. Accordingly, these studies support the potential value of technology-supported and game-based approaches for grammar learning. In the present study, a systematic needs analysis and careful evaluation of the questionnaire are used to identify learner requirements before decisions are made about the subsequent application design.

Needs Analysis and Instrument Validation

This study adopts Hutchinson and Waters' (1987) Necessities, Lacks, and Wants framework to structure the Needs Analysis Questionnaire around three constructs: Necessities, which refer to what students need to know; Lacks, which refer to gaps between their current and target

proficiency; and Wants, which refer to students' own learning preferences. Selected items in the Wants construct were informed by relevant constructs from the Unified Theory of Acceptance and Use of Technology (UTAUT), particularly performance expectancy, effort expectancy, and facilitating conditions related to the use of digital learning tools (Venkatesh et al., 2003). To evaluate the content validity of the instrument, expert ratings were quantified using the Content Validity Index (CVI), while the resulting item and scale level indices were interpreted together with qualitative expert feedback to guide questionnaire revision (Lynn, 1986; Polit & Beck, 2006).

Research Objectives (RO)

RO1: To evaluate the content validity and reliability of the Needs Analysis Questionnaire through expert review and pilot testing.

RO2: To explore Form 1 students' perceived learning needs, challenges, and preferences regarding English simple past tense learning and game-based grammar learning support based on the Needs Analysis Questionnaire.

Research Questions (RQ)

RQ1: What evidence of content validity and reliability is obtained for the Needs Analysis Questionnaire through expert review and pilot testing?

RQ2: What are Form 1 students' perceived learning needs, challenges, and preferences regarding English simple past tense learning and game-based grammar learning support?

Table 1 summarises the alignment between the research objectives, instruments, and data analysis methods.

Table 1: Alignment of Research Objectives, Instruments, and Data Analysis

Research Objective (RO)	Method & Instrument	Data Analysis
RO1: Content Validity and Reliability	Expert Validation Form: The Expert Validation Form was used to obtain evaluations and feedback from the three SMEs, while the revised Needs Analysis Questionnaire was administered to 67 students for pilot reliability testing.	CVI & Qualitative Synthesis: CVI scores were used to summarise the level of expert agreement on item relevance, while qualitative feedback was synthesised to explain the revisions made to the questionnaire. Cronbach's alpha was used to examine the internal consistency of the revised questionnaire during pilot testing.
RO2: Needs Analysis	Needs Analysis Questionnaire: Administered to the 67 students to examine their perceived learning needs, difficulties with the English simple past tense, and preferences for game-based learning support.	Descriptive Statistics: Likert-scale responses were analysed using Statistical Package for the Social Sciences (SPSS) to compute frequency, percentage, mean, standard deviation, and subscale mean scores. Items were further ranked by mean scores to identify the most prominent

needs, lacks, and wants among the students.

Methodology

Research Design

The Needs Analysis Questionnaire was primarily structured around Hutchinson and Waters' (1987) Necessities, Lacks, and Wants framework, which informed the three main constructs: Necessities (Part B), Lacks (Part C), and Wants (Part D). Selected items in Part D were also informed by relevant constructs from the UTAUT, particularly performance expectancy, effort expectancy, and facilitating conditions related to digital learning tools (Venkatesh et al., 2003). This allowed the questionnaire to investigate students' perceived grammar learning needs in conjunction with the technology-supported grammar learning preferences.

Participants and Sampling

This pilot study was conducted with 67 Form 1 ESL students from two government secondary schools in Kuala Lumpur, with 34 students from one school and 33 students from the other. The participants were selected purposively according to the study inclusion criteria: they were Form 1 students who had learned the English simple past tense and had obtained parental or guardian consent to participate. This pilot sample was not meant to be representative of the larger population of Malaysian Form 1 students, but rather for the preliminary instrument evaluation.

This pilot study had 67 participants, which was deemed to be sufficient. The pilot aimed to examine the reliability of the revised Needs Analysis Questionnaire and to obtain preliminary descriptive information about students' perceived learning needs, difficulties, and preferences. Bujang et al. (2024) recommended a minimum of 30 respondents for a pilot study assessing questionnaire reliability using Cronbach's alpha after allowing for a 20% nonresponse rate. The present sample of 67 participants, therefore, exceeded this recommended minimum.

Research Instruments

To address the research objectives, an Expert Validation Form and a Needs Analysis Questionnaire were utilised during this phase.

Expert Validation Form: An evaluation form provided to three SMEs to assess the content validity, clarity, and appropriateness of the questionnaire prior to pilot administration.

Needs Analysis Questionnaire: A closed-ended questionnaire structured around Hutchinson and Waters' (1987) Necessities, Lacks, and Wants framework, with selected items in the Wants section informed by relevant UTAUT constructs. The questionnaire examined students' perceived grammar learning needs, difficulties with the English simple past tense, and preferences for game-based learning support. One additional demographic item on students' device type for learning apps or games was added based on Expert 3's recommendation.

Scale Justification: The questionnaire used a four-point Likert scale, ranging from 1 = Strongly Disagree to 4 = Strongly Agree. The four-point scale was designed to motivate students to express a clear degree of agreement or disagreement and not to choose a neutral midpoint.

Expert Validation and CVI

Content validation is a process of checking if the items of the questionnaire are a good representation of the content to be measured and suitable for the respondents. The questionnaire in this study was sent to three expert evaluators, who were all experienced English language experts. They checked the questionnaire for pedagogical appropriateness, clarity of instructions, and curriculum appropriateness. The CVI was used to quantify the experts' feedback using their ratings. Items that received higher levels of expert agreement were kept, and items that needed improvement were revised, reworded, or split into single-construct items based upon the experts' qualitative feedback.

Data Collection and Analysis Procedure

Following expert review and the necessary questionnaire revisions, the revised questionnaire was administered to 67 Form 1 students during the pilot study. The participants completed Parts B, C, and D using a four-point Likert scale ranging from 1 = Strongly Disagree to 4 = Strongly Agree. Consent was obtained prior to the administration of the instruments. The students first completed the four-point Needs Analysis Questionnaire. Brief explanations of questionnaire instructions and item wording were provided when necessary to ensure that students understood the questionnaire before responding.

- 1) **For RO1:** The CVI scores were tabulated to describe the level of expert agreement on the questionnaire items, while the experts' qualitative feedback was synthesised to explain the revisions made to the instrument. Cronbach's alpha was then calculated to examine the internal consistency of the revised questionnaire during pilot testing.
- 2) **For RO2:** Responses to the four-point Likert scale questionnaire were analysed using SPSS to calculate frequencies, percentages, means, and standard deviations. The analysis was used to describe students' perceived learning needs, difficulties, and preferences related to English simple past tense learning and game-based learning support.

Results and Discussion

RO1: Content Validity and Reliability of the Questionnaire

The first research objective aimed to evaluate the content validity and reliability of the Needs Analysis Questionnaire, which assesses Form 1 students' perceived necessities, difficulties (Lacks), and preferences for game-based learning (Wants) regarding the English simple past tense. The instrument was submitted to three SMEs with extensive experience in English-language education for review. The background of the expert panel is shown in Table 2.

Table 2: Background of Expert Validators

Expert	Qualification	Area of Expertise		Years of Experience	Affiliation	
Expert 1	PhD	English Education; and Research	Language Design Development	10 years	Academy of Language Studies, Teknologi (UiTM), Shah Alam, Selangor	Universiti MARA
Expert 2	PhD	English Education; and Research	Language Design Development	9 years	Centre for Foundation Studies (CFS), UiTM Dengkil, Selangor	
Expert 3	PhD	English Education	Language	15 years	Language Centre, UPNM	

Expert Review Findings

After examining the three major constructs of the questionnaire (Part B – Necessities, Part C – Lacks, and Part D – Wants), the experts pointed out areas that needed revisions prior to the administration of the pilot. The experts' evaluative feedback identified problems with the wording of the items, clarity of the items, double-barrelled items, and contextual appropriateness for Form 1 students, although the questionnaire, overall, appeared aligned with the intended constructs and target respondents.

Qualitative Feedback and Instrument Amendments

The experts' feedback was summarised and resulted in four main categories of amendments: (1) removal of double-barrelled questions, (2) contextualisation of generic terminology, (3) inclusion of examples for regular and irregular verbs, and (4) inclusion of one demographic item on students' type of device for learning apps or games.

Elimination of Double-Barrelled Questions (Expert 2's Feedback)

A methodological revision was made to not include more than one concept in a questionnaire item, based on Expert 2's feedback. Expert 2 said that the conjunctions used in the items, such as and/or, might mean that the respondents would have to consider two ideas in one item, which might impact the clarity of the response. A student may like games, but not apps, or points, but not badges, for instance. Several items in Parts C and D were modified and broken down into individual items to ensure that each item was centred on one idea.

- Original item C1 ("identify and use") was broken down into revised C1 (recognising verbs) and C2 (using verbs).
- Original item C7 ("rote memorisation and drilling") was split into revised C8 (memorising lists) and C9 (doing the same exercises repeatedly).
- Original item D1 ("digital games or learning apps") was broken down into revised D1 (digital games like puzzles) and D2 (learning apps like Quizizz).
- Original item D3 ("anytime and anywhere") was divided into revised D4 (any time) and D5 (anywhere).

- Original item D4 (“no internet or strong Wi-Fi”) was broken up into revised D6 (without internet) and D7 (weak Wi-Fi).
- Original item D5 (“points or badges”) was divided into revised D8 (earning points) and D9 (getting badges).
- Original item D6 (“simple to use and smooth flow”) was broken into revised D10 (easy to use) and D11 (finding lessons quickly).

Contextualising Generic Terminology (Expert 1’s Feedback)

Expert 1 commented that a number of items in Part B: Necessities were very general or used jargon that might not be understood by Form 1 students. The following sub-amendments were made:

- Simplifying Grammar Jargon: Expert 1 suggested revisions to items B2 and B3. B2 was reworded using basic English grammar rules, while B3 was reworded using clearer past tense wording for changing verbs.
- Connecting Grammar to Application: Items B4, B5, and B6 were marked as “very generic” and did not have a clear learning goal. For example, B4 was modified from “I need to be able to use various tenses accurately” to “I need to use tenses correctly so my writing and speaking are clear and easy to understand.” In the same way, B5 and B6 were rephrased to link past tense learning with speaking confidence and communication.
- Contextualising for Gamification: Expert 1 suggested that items D5 and D6 should be specified to be related to the learning process. As a result, the amended items were reworded to link rewards to students’ learning progress and to relate the game features more explicitly to game-based learning.

Addition of Examples for Regular and Irregular Verbs (Expert 3’s Feedback)

Expert 3 suggested the inclusion of examples of verbs that are regular and irregular to clarify the items. This suggestion was accepted as Form 1 students might be able to understand the item better if examples are given. Hence, examples were incorporated in the questionnaire items.

Addition of Device-Type Information (Expert 3’s Feedback)

Expert 3 reported that the items in the questionnaire were mostly suitable. The expert, however, suggested that there should be an addition of the type of device students use for learning apps or games, especially Android or Apple/iOS. This suggestion was accepted because students’ device type could inform the design of the application, their access to it, and its compatibility with different devices. Hence, it was decided to add one more item in the demographic part of the questionnaire.

Quantitative Expert Agreement: CVI

The CVI was used to determine the degree of expert agreement on the initial 21 substantive items of the Needs Analysis Questionnaire by analysing the ratings from the three experts. Each item was rated on a 5-point scale, where 1 = Not Relevant and 5 = Highly Relevant. A score of 4 (Relevant) and 5 (Highly Relevant) was combined and given a score of 1, and a score of 1-3

was combined and given a score of 0. Next, the Item-Level CVI (I-CVI) was determined by dividing the sum of the scores by the number of experts (Polit & Beck, 2006).

The I-CVI indicates the proportion of experts who rated an item as relevant. An I-CVI of 1.00 reflects agreement among all three experts regarding the relevance of the item. An I-CVI of .67 indicates that two of the three experts rated the item as relevant, whereas an I-CVI of .33 indicates that only one of the three experts rated the item as relevant. Items with lower I-CVI values were examined together with the experts' qualitative feedback to determine the revisions required (Lynn, 1986; Polit & Beck, 2006). Table 3 presents the CVI results for the initial 21 substantive-item student questionnaire as rated by three expert validators.

Table 3: CVI for the Student Questionnaire (21 Substantive Items, 3 Experts)

Item	Construct	Expert 1	Expert 2	Expert 3	I- CVI	Suggestion/Action Taken
B1	Goals of learning English grammar	5	5	5	1.00	None
B2	Verbs vs. Nouns distinction	3	5	5	.67	E1: Simplify wording/reworded using basic grammar rules
B3	Rules for Regular/Irregular Verbs	3	5	5	.67	E1: Simplify wording/reworded with clearer past tense wording
B4	Accurate tense use	3	5	5	.67	E1: Clarify the learning purpose/reworded to link tense use with clear communication
B5	Confident communication	3	5	5	.67	E1: Sentence too generic/reworded to link past tense with speaking confidence
B6	Use of 'was' and 'were'	3	5	5	.67	E1: Clarify statement/reworded to link was/were with communication
B7	Identification of time words	5	5	5	1.00	None
C1	Identifying Regular/Irregular Forms	4	3	4	.67	E2: Double-barrelled item; E3: Add verb examples/split into two items with examples
C2	Consonant doubling (-ed)	4	5	5	1.00	None
C3	Past vs. Present Perfect context	4	5	5	1.00	None
C4	Errors after 'Did'	4	5	5	1.00	None
C5	Missing time markers	4	5	5	1.00	None

Item	Construct	Expert 1	Expert 2	Expert 3	I- CVI	Suggestion/Action Taken
C6	L1 translation errors	4	5	5	1.00	None
C7	Rote memorisation is boring	4	3	5	.67	E2: Double-barrelled item/split into two items
C8	Wrong forms (goed/buyed)	4	5	5	1.00	None
D1	Digital games over textbooks	4	3	5	.67	E2: Double-barrelled item/split games and apps
D2	Immediate feedback	4	5	5	1.00	None
D3	Mobile learning preference	4	3	5	.67	E2: Double-barrelled item/split “anytime” and “anywhere” into two items
D4	Offline mode/No Wi-Fi	4	3	5	.67	E2: Double-barrelled item/split Wi-Fi/internet
D5	Points and badges	3	3	5	.33	E1: Link rewards to learning progress; E2: Double-barrelled item/split points and badges
D6	Simple navigation and flow	3	3	5	.33	E1: Link to game-based learning; E2: Double-barrelled item/split ease of use and lesson access
S-CVI/Ave					.78	

Note. E1 = Expert 1; E2 = Expert 2; E3 = Expert 3. Expert ratings of 4 or 5 on a 5-point relevance scale were coded as 1 (relevant), while ratings of 1 to 3 were coded as 0 (not relevant). I-CVI = Item-Level CVI; S-CVI/Ave = Scale-Level CVI based on the average I-CVI. Items with lower I-CVI values were revised based on the experts' suggestions before pilot administration.

Nine items achieved full expert agreement with an I-CVI of 1.00, while 10 items obtained an I-CVI of .67 and two items obtained an I-CVI of .33. The I-CVI results were considered together with the experts' qualitative comments, which highlighted concerns related to wording, item clarity, and double-barrelled statements. Items requiring improvement were subsequently revised based on the experts' suggestions before pilot administration.

Interpretation of CVI Results

The quantitative analysis yielded a Scale-Level CVI/Average (S-CVI/Ave) of .78 for the initial 21 substantive-item questionnaire. Nine items achieved an I-CVI of 1.00, 10 items obtained an I-CVI of .67, and two items obtained an I-CVI of .33. These results were interpreted together with the experts' qualitative feedback to identify items requiring revision. Based on the combined quantitative and qualitative evidence, the flagged items were revised before the questionnaire was administered in the pilot study.

Based on the experts' evaluative feedback, all flagged items were systematically revised. Double-barrelled items were broken into single-construct items, and generic language was reworded using age-appropriate language for Form 1 students. After these amendments, the questionnaire was extended from 21 to 28 substantive Likert-scale items, including seven Necessities items, 10 Lacks items, and 11 Wants items. The S-CVI/Ave of .78 refers to the initial 21 substantive items; a second complete CVI was not recalculated for the revised 28 substantive items. Subsequently, the revised 28 substantive-item questionnaire went on to pilot administration for further evaluation of its reliability and to provide preliminary descriptive findings.

The iterative revision process in this study used the quantitative CVI results, as well as the experts' qualitative comments, to direct changes to the questionnaire items, and the calculation and interpretation of the CVI were based on Polit and Beck (2006).

Using expert review, an S-CVI/Ave of .78 was obtained for the initial 21 substantive-item questionnaire for RO1. When combined with the experts' qualitative feedback, item-level CVI results revealed problems with wording, clarity, and double-barrelled items. These issues were resolved prior to the administration of the pilot, and then the modified questionnaire proceeded to the pilot testing phase with Form 1 ESL students. Table 4 shows the results of the reliability analysis of the Needs Analysis Questionnaire using Cronbach's alpha.

Table 4: Reliability Analysis (Cronbach's Alpha) for the Needs Analysis Questionnaire

Subscale	No. of Items	Cronbach's α	Reliability Level
Part B: Necessities	7	.773	Acceptable
Part C: Lacks	10	.723	Acceptable
Part D: Wants	11	.763	Acceptable
Overall Substantive Items	28	.728	Acceptable

Note. N = 67. A Cronbach's alpha value of .70 was adopted as the operational minimum for acceptable internal consistency in this pilot analysis (George & Mallery, 2003).

Results show that acceptable reliability was obtained for all subscales. Part B: Necessities recorded a Cronbach's alpha value of .773 for seven items, followed by Part D: Wants with .763 for 11 items, and Part C: Lacks with .723 for 10 items. The 28 substantive items overall had a Cronbach's alpha value of .728, which is acceptable. Internal consistency for each of the three subscales and the 28 substantive items overall was acceptable, with all coefficients above the operational minimum value of .70 adopted for this pilot analysis. This result agrees with the commonly cited interpretation as proposed by George and Mallery (2003), where a Cronbach's alpha of .70 or greater is deemed acceptable. Table 5 shows the demographic profile of the 67 Form 1 respondents who participated in the pilot study.

Table 5: Demographic Profile of Respondents (N = 67)

Variable/Category	Frequency (n)	Percentage (%)
School		
School S	34	50.7
School K	33	49.3
Gender		
Male	31	46.3

Variable/Category	Frequency (n)	Percentage (%)
Female	36	53.7
Age		
13 years	50	74.6
14 years	17	25.4
First Language		
Bahasa Malaysia/Malay	30	44.8
Mandarin/Chinese	34	50.7
Tamil	3	4.5
English Speaking Ability		
Not well	17	25.4
Okay	19	28.4
Good	21	31.3
Very good	10	14.9
English Writing Ability		
Not well	18	26.9
Okay	22	32.8
Good	20	29.9
Very good	7	10.4
Last English Exam Grade		
A (80-100)	7	10.4
B (70-79)	12	17.9
C (60-69)	8	11.9
D (40-59)	15	22.4
E (0-39)	13	19.4
Don't remember	12	17.9
Frequency of English Practice at Home		
Every day	7	10.4
A few times a week	13	19.4
Once a week	25	37.3
Rarely	12	17.9
Never	10	14.9
Enjoyment of Learning English		
Love it	10	14.9
Like it	12	17.9
Okay	24	35.8
Not really	13	19.4
Don't like it at all	8	11.9
Smartphone/Tablet Ownership		
Yes, own	47	70.1
Yes, share with family	12	17.9
No, don't have	8	11.9
Frequency of App/Game Use		
Every day	36	53.7
A few times a week	25	37.3
Rarely	5	7.5
Never	1	1.5
Type of Device for Learning Apps or Games		
Android smartphone	32	47.8

Variable/Category	Frequency (n)	Percentage (%)
Apple/iOS smartphone	11	16.4
Tablet/iPad	7	10.4
Laptop/computer	8	11.9
No device for learning apps or games	9	13.4

Note. All percentages are based on N = 67.

The respondents were almost equally divided between the two schools, with 50.7% from School S and 49.3% from School K. In terms of gender, 31 (46.3%) of the students were male, and 36 (53.7%) were female. The majority of respondents were 13 years old (n = 50, 74.6%), and 17 students (25.4%) were 14 years old.

When it came to language background and English proficiency, Mandarin/Chinese (n = 34, 50.7%) was the most common first language, followed by Bahasa Malaysia/Malay (n = 30, 44.8%) and Tamil (n = 3, 4.5%). The largest group self-rated their English speaking ability as good (n = 21, 31.3%), followed by okay (n = 19, 28.4%), not well (n = 17, 25.4%), and very good (n = 10, 14.9%). Most students self-reported their level of English writing as okay (n = 22, 32.8%), followed by good (n = 20, 29.9%), not well (n = 18, 26.9%), and very good (n = 7, 10.4%). With regard to their last English examination grade, the largest number of students had achieved Grade D (n = 15, 22.4%) and Grade E (n = 13, 19.4%), with 12 students (17.9%) not being able to remember their grade.

The results also revealed different levels of home practice of English. The majority of students practised English once a week (n = 25, 37.3%), and only seven students (10.4%) practised daily. As for enjoyment, the largest group said learning English was okay (n = 24, 35.8%), and 22 students said they liked or loved learning English. The majority of students had a smartphone or tablet (n = 47, 70.1%), and over half of the students reported using apps or games daily (n = 36, 53.7%). By type of device, the most commonly reported device was an Android smartphone for learning apps or games (n = 32, 47.8%), followed by Apple/iOS smartphone (n = 11, 16.4%), no device for learning apps or games (n = 9, 13.4%), laptop/computer (n = 8, 11.9%), and tablet/iPad (n = 7, 10.4%). These findings offer contextual data relevant to RO2 because of the different levels of self-rated English speaking and writing ability among the respondents and the fact that they generally had access to digital tools that can support game-based grammar learning. Table 6 gives the respondents' perceived learning needs in Part B: Necessities with regard to the English simple past tense.

Table 6: Descriptive Statistics for Part B: Necessities (Perceived Learning Needs)

Item	Statement	SD %	D %	A %	SA %	M	SD	% Agree	Rank
B1	Understanding the goals of grammar learning is important	6.0	20.9	35.8	37.3	3.04	0.91	73.1	5
B2	Need basic English rules for past tense sentences	0.0	11.9	50.7	37.3	3.25	0.66	88.1	1
B3	Need to learn the rules for changing verbs to the past tense	4.5	17.9	38.8	38.8	3.12	0.86	77.6	3
B4	Need correct tenses for clear writing and speaking	4.5	11.9	50.7	32.8	3.12	0.79	83.6	3

Item	Statement	SD %	D %	A %	SA %	M	SD	% Agree	Rank
B5	Need past tense for speaking confidence	4.5	11.9	44.8	38.8	3.18	0.82	83.6	2
B6	Want to learn was/were for better communication	1.5	16.4	52.2	29.9	3.10	0.72	82.1	4
B7	Need to recognise time markers (yesterday, last week)	4.5	19.4	43.3	32.8	3.04	0.84	76.1	5

Note. N = 67. SD = Strongly Disagree; D = Disagree; A = Agree; SA = Strongly Agree. M = Mean (1 = Strongly Disagree, 4 = Strongly Agree). SD = Standard Deviation. % Agree = combined percentage of Agree and Strongly Agree responses. Rank is based on the mean score within the subscale (1=highest). Items with equal mean scores share the same rank.

All recorded items have mean scores greater than 3.00, which reflects general agreement with the stated learning needs. The item with the highest score was B2 “Need basic English rules for past tense sentences” (M = 3.25, SD = 0.66) with 88.1% agreement, indicating that many respondents perceived a need for basic English rules when forming past tense sentences. This was followed by B5, “Need past tense for speaking confidence” (M = 3.18, SD = 0.82; 83.6% agreement). B3, “Need to learn rules for changing verbs to the past tense,” and B4, “Need correct tenses for clear writing and speaking,” were tied for third place, with both having M = 3.12. The lowest mean scores were for B1 (M = 3.04), “Understanding the goals of grammar learning is important,” and B7 (M = 3.04), “Need to recognise time markers.” Generally, the pilot respondents indicated a need for basic past tense rules, correct use of tenses and practical grammar support for communication. Table 7 shows the respondents’ perception of the learning problems of the simple past tense in English in Part C: Lacks.

Table 7: Descriptive Statistics for Part C: Lacks (Perceived Learning Difficulties)

Item	Statement	SD %	D %	A %	SA %	M	SD	% Agree	Rank
C1	Hard to recognise correct past tense verbs	1.5	13.4	52.2	32.8	3.16	0.71	85.1	1
C2	Hard to use past tense verbs when talking/writing	3.0	20.9	40.3	35.8	3.09	0.83	76.1	4
C3	Forget to double the final consonant before -ed	4.5	31.3	38.8	25.4	2.85	0.86	64.2	9
C4	Struggle to choose simple past vs other tenses	6.0	20.9	46.3	26.9	2.94	0.85	73.1	8
C5	Mistakes with ‘Did’ (e.g., Did you brushed)	4.5	20.9	43.3	31.3	3.01	0.84	74.6	6
C6	Hard to identify tense without a time marker	9.0	14.9	43.3	32.8	3.00	0.92	76.1	7
C7	L1 translation causes grammar errors	6.0	16.4	44.8	32.8	3.04	0.86	77.6	5
C8	Memorising word lists is boring	1.5	16.4	49.3	32.8	3.13	0.74	82.1	2
C9	Repetitive grammar exercises are boring	3.0	19.4	41.8	35.8	3.10	0.82	77.6	3

C10	Difficulty forming verbs (goed, buyed)	6.0	17.9	46.3	29.9	3.00	0.85	76.1	7
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Note. N = 67. SD = Strongly Disagree; D = Disagree; A = Agree; SA = Strongly Agree. M = Mean (1 = Strongly Disagree, 4 = Strongly Agree). SD = Standard Deviation. % Agree = combined percentage of Agree and Strongly Agree responses. Rank is based on the mean score within the subscale (1 = highest). Items with equal mean scores share the same rank.

The highest ranked difficulty was C1 “Hard to recognise correct past tense verbs” (M = 3.16, SD = 0.71), and 85.1% of the respondents agreed that recognising correct past tense verb forms was a prominent perceived difficulty. This was then followed by C8, “Memorising word lists is boring” (M = 3.13, SD = 0.74; 82.1% agreement), and C9, “Repetitive grammar exercises are boring” (M = 3.10, SD = 0.82; 77.6% agreement). These responses reflect perceived problems not only in grammar learning, but also with conventional learning activities. Other difficulties mentioned included use of past tense verbs when speaking/writing (C2: M = 3.09, SD = 0.83; 76.1% agreement) and first language translation leading to grammar errors (C7: M = 3.04, SD = 0.86; 77.6% agreement). The lowest mean score (M = 2.85, SD = 0.86) was recorded for C3, “Forget to double the final consonant before -ed,” although 64.2% of the respondents agreed with the statement. Generally, the pilot respondents indicated perceived challenges with verb form recognition, the use of past tense forms, first language influence, and grammar learning activities. The respondents’ preferences for game-based learning are shown in Table 8 under Part D: Wants.

Table 8: Descriptive Statistics for Part D: Wants (Preferences for Game-Based Learning)

Item	Statement	SD %	D %	A %	SA %	M	SD	% Agree	Rank
D1	Like digital games for grammar study	3.0	10.4	40.3	46.3	3.30	0.78	86.6	6
D2	Like learning apps (Quizizz/Kahoot)	3.0	14.9	38.8	43.3	3.22	0.81	82.1	8
D3	Immediate feedback is helpful	3.0	11.9	32.8	52.2	3.34	0.81	85.1	4
D4	Like mobile apps to learn English anytime	1.5	14.9	41.8	41.8	3.24	0.76	83.6	7
D5	Like mobile apps to learn English anywhere	0.0	11.9	44.8	43.3	3.31	0.68	88.1	5
D6	Want an offline game	3.0	13.4	55.2	28.4	3.09	0.73	83.6	9
D7	Want a game that works on weak Wi-Fi	1.5	22.4	49.3	26.9	3.01	0.75	76.1	10
D8	Want points for progress	6.0	11.9	34.3	47.8	3.22	0.88	82.1	8
D9	Want badges for progress	0.0	14.9	29.9	55.2	3.40	0.74	85.1	3
D10	Want easy-to-use game	3.0	7.5	28.4	61.2	3.46	0.77	89.6	2
D11	Want quick lesson access	1.5	7.5	31.3	59.7	3.49	0.70	91.0	1

Note. N = 67. SD = Strongly Disagree; D = Disagree; A = Agree; SA = Strongly Agree. M = Mean (1 = Strongly Disagree, 4 = Strongly Agree). SD = Standard Deviation. % Agree = combined percentage of Agree and Strongly Agree responses. Rank is based on the mean score within the subscale (1 = highest). Items with equal mean scores share the same rank.

The agreement levels of all items were above 75%, which generally showed positive preferences for the proposed game-based learning features. The item with the highest score was D11 “Want quick lesson access” ($M = 3.49$, $SD = 0.70$) with 91.0% agreement, indicating that respondents highly valued the quick access to grammar lessons. This was followed by D10, “Want easy-to-use game” ($M = 3.46$, $SD = 0.77$; 89.6% agreement), signifying ease of use was also a preference among the respondents.

The respondents also expressed positive preferences for the motivational and feedback features. 85.1% agreed with D9, “Want badges for progress” ($M = 3.40$, $SD = 0.74$), and 85.1% agreed with D3, “Immediate feedback is helpful” ($M = 3.34$, $SD = 0.81$). There was also a considerable level of preference for mobile learning anywhere (D5: $M = 3.31$, $SD = 0.68$; 88.1% agreement). The lowest mean score ($M = 3.01$, $SD = 0.75$) was for D7, “Want a game that works on weak Wi-Fi,” but with 76.1% agreement. The general attitude of the pilot respondents towards the game-based grammar learning features was positive, particularly regarding quick access to lessons, ease of use, instant feedback, mobile access, and motivational features. Table 9 shows the overall mean scores for the Needs Analysis Questionnaire subscales.

Table 9: Subscale Mean Scores for the Needs Analysis Questionnaire

Subscale	M	SD	Min	Max
Part B: Necessities	3.12	0.52	1.71	3.86
Part C: Lacks	3.03	0.44	1.70	3.70
Part D: Wants	3.28	0.42	2.09	3.91

Note. $N = 67$. M = Mean of all items in the subscale (1 = Strongly Disagree, 4 = Strongly Agree). All subscale means exceeded 3.00, indicating overall agreement across Necessities, Lacks, and Wants.

The mean scores on all three subscales were above 3.00, indicating that generally the respondents agreed. The mean score for Part D: Wants was the highest ($M = 3.28$, $SD = 0.42$), showing positive preferences for game-based grammar learning features. This was followed by Part B: Necessities ($M = 3.12$, $SD = 0.52$), indicating that the respondents perceived that the English simple past tense is important to learn for grammar and communication. A mean score of 3.03 ($SD = 0.44$) was recorded on Part C: Lacks, which also indicated perceived difficulties in past tense forms and usage. The pilot results in general suggest that the respondents identified learning needs, identified difficulties in grammar, and expressed favourable attitudes towards grammar learning support through games. Table 10 presents the top-ranked items for each of the subscales of the Needs Analysis Questionnaire.

Table 10: Top-Ranked Items per Subscale

Subscale	Rank	Item	Statement	M	% Agree
Necessities	1	B2	Need basic English rules for past tense sentences	3.25	88.1
	2	B5	Need past tense for speaking confidence	3.18	83.6
	3	B3	Need to learn the rules for changing verbs to the past tense	3.12	77.6
	3	B4	Need correct tenses for clear writing and speaking	3.12	83.6

Lacks	1	C1	Hard to recognise correct past tense verbs	3.16	85.1
	2	C8	Memorising word lists is boring	3.13	82.1
	3	C9	Repetitive grammar exercises are boring	3.10	77.6
Wants	1	D11	Want quick lesson access	3.49	91.0
	2	D10	Want easy-to-use game	3.46	89.6
	3	D9	Want badges for progress	3.40	85.1

Note. N = 67. Items are ranked by mean score within each subscale. % Agree = combined percentage of Agree and Strongly Agree responses. Items with equal mean scores share the same rank.

The top item on the Necessities subscale was B2: Need basic English rules for past tense sentences ($M = 3.25$, 88.1% agreement), followed by B5: Need past tense for speaking confidence ($M = 3.18$, 83.6% agreement). B3, “Need to learn rules for changing verbs to the past tense,” and B4, “Need correct tenses for clear writing and speaking,” were tied for third place with a mean of 3.12 and agreement levels of 77.6% and 83.6% respectively. The pilot respondents’ responses indicate that they perceived a need for basic grammar rules and appropriate tense use to support communication.

The highest-ranked perceived difficulty in the Lacks subscale was C1, “Hard to recognise correct past tense verbs” ($M = 3.16$, 85.1% agreement), followed by C8, “Memorising word lists is boring” ($M = 3.13$, 82.1% agreement), and C9, “Repetitive grammar exercises are boring” ($M = 3.10$, 77.6% agreement). These answers reflect perceived problems in recognising the right form of the past tense verb as well as problems in engaging in conventional grammar learning activities. The highest preferences for the Wants subscale were for quick access to lessons (D11: $M = 3.49$, 91.0% agreement), an easy-to-use game (D10: $M = 3.46$, 89.6% agreement), and badges for progress (D9: $M = 3.40$, 85.1% agreement). The pilot results indicate some of the features that may be of interest in a game-based grammar application, such as simple explanations of grammar, engaging practice, ease of access to the lesson, ease of navigation, immediate feedback, and motivation/reward features.

Conclusion

The study addresses two research questions: the content validity and reliability of the Needs Analysis Questionnaire and the perceived learning needs, challenges, and preferences of the respondents related to the learning of the English simple past tense and game-based grammar learning support. The initial 21 substantive-item questionnaire had an S-CVI/Ave of .78 for RO1. The I-CVI results, in conjunction with the experts’ qualitative feedback, revealed problems primarily with double-barrelled wording, clarity, and general phrasing. These items were then revised, separated, and reworded based on the feedback prior to the pilot administration. The revised 28 substantive-item questionnaire subsequently demonstrated acceptable internal consistency, with an overall Cronbach’s alpha of .728.

For RO2, the pilot needs analysis findings indicated that the respondents reported clear perceived learning needs and difficulties related to the English simple past tense, together with positive preferences for game-based grammar learning. The overall subscale means exceeded 3.00, with the highest mean recorded for Wants ($M = 3.28$), followed by Necessities ($M = 3.12$) and Lacks ($M = 3.03$). The respondents particularly reported a need for basic English rules for past tense sentences and difficulty recognising correct past tense verb forms. They also

perceived memorising word lists and doing repetitive grammar exercises as boring. They also expressed preferences for quick lesson access, an easy-to-use game, immediate feedback, and reward features such as badges. Android smartphones were the most commonly reported device for learning apps or games. These pilot findings provide preliminary indications of features that may be relevant to the proposed game-based application, including simple grammar explanations, interactive practice, user-friendly navigation, immediate feedback, and motivational features.

As this pilot study involved three expert validators and 67 students from two government secondary schools in Kuala Lumpur, the findings should be interpreted within the context of instrument refinement rather than generalised to the wider Form 1 population. The revised questionnaire will subsequently be used in the main needs analysis with a larger sample, and the findings from that phase will contribute to the subsequent design and development of the game-based learning application.

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