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# Development and validation of expert evaluation instrument for web-based grammatical competence module

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## Abstract

The advancements in web-based learning and improvements in academic grammatical competence have increased the importance of effective grammar learning. The foundation of the English language is grammatical proficiency. This study aimed to address the evaluation gap for web-based grammatical competence modules by developing and validating a 45-item assessment tool that encompasses four essential constructs: design, technical aspects, content, and pedagogy. The content validity of the instrument was evaluated through a two-step process: instrument development and instrument validation. Six experts reached consensus (I-CVI of 1) on 42 items, while some disagreement (I-CVI of 0.83) was noted on three items, confirming the relevance of the instrument. The S-CVI (average) content validity index of 0.99 and the S-CVI (universal agreement) index of 1 confirmed the instrument's content validity. Consequently, this study demonstrates that the effectiveness of a web-based grammatical competence module in enhancing students' English grammatical skills can be measured using this validated instrument. ESL teachers can also employ this instrument as a reliable method to assess and improve online grammar courses, ultimately supporting ESL learners in achieving better English language proficiency.

**Keywords:** Content validity index, English as a second language, Expert evaluation, Grammatical competence, Module development, Instrument development, Web-based learning.

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## Contents

**Contribution of this paper to the literature**
This study enriches the prevailing literature about the development and validation of expert instruments used to evaluate web-based grammatical competence modules designed for pre-university level students. This study can serve as a valuable parameter for verifying future expert instruments for module evaluations.

## 1. Introduction

English language mastery is vital as it is a universal language (Trudgill & Hannah, 2013). Grammar is an indispensable facet in the education of the English language, serving as the core of literacy development and the attainment of other language skills (Abdulhassan, Hussein, & Abdul-Settar, 2024; Asifayanti, Weda, & Abduh, 2021; Watanapokakul, 2024). The COVID-19 pandemic also accelerated the application of technologies or innovations in education (Peñarrubia-Lozano, Segura-Berges, Lizalde-Gil, & Bustamante, 2021). Similarly, Murtiningsih and Failaih Zulfa (2024) underscored the notion of leveraging information and communications technology (ICT) in language (including grammar) teaching and learning in this 21st century. Teaching languages has increased due to the widespread use of technology.

Field experts' feedback must be considered during the design and development of a module for web-based learning to effectively communicate the attainment of grammatical competence. The developed instrument must demonstrate adequate content validity to ensure that each item assesses what it is designated to evaluate (Elangovan & Sundaravel, 2021). A content-valid instrument can then be used to collect data for analysis, in this case, empirical data on the experts' assessment of a web-based grammatical competence module for ESL students. This drives the realization of language education sustainability, which is part of the 4th educational target of one of the Sustainable Development Goals (SDGs) (Rosa, 2017).

This study developed and validated an evaluation instrument for a web-based grammatical competence module for pre-university ESL students. The assessment of the instrument's item-level and scale-level content validity index (CVI) was guided by the following research questions:

1. RQ1: What is the instrument's item-level content validity index (I-CVI) in the evaluation of a web-based grammatical competence module?
2. RQ2: What is the instrument's scale-level content validity index (S-CVI) in the evaluation of a web-based grammatical competence module?

### *1.1. Grammar and Digital Tools for Grammar Learning*

English proficiency basically requires mastery of speaking, writing, listening, and reading. However, grammar learning and the importance of grammar in communication are often overlooked (Murtiningsih, Wati, & Haryadi, 2024). Grammar is the foundation of the mastery of all language skills (Abdulhassan et al., 2024; Asifayanti et al., 2021). Good grammar ensures the progress of reading and writing prowess as well as the construction of comprehensible sentences that accurately convey the intended message (Abdulhassan et al., 2024; Murtiningsih et al., 2024). The use of appropriate vocabularies alone is not adequate to achieve the desired communication, especially when one lacks grammar competence (Haryudin & Argawati, 2018). Grammar is a crucial aspect of language learning, as it contains all of the language structures and rules that are essential for communication.

Although English is regarded as Malaysia's secondary language, it is mandatory to learn this language in schools (Kashinathan & Aziz, 2021), and it is a prerequisite for students to pursue higher education. Besides, many Malaysian students still demonstrate poor English grammar (Idris, Said, & Tan, 2020). Learning grammar is crucial for creating coherent sentences because it is a basic linguistic structure (Alijanian, 2012). However, only fundamental grammar rules are taught conventionally in classrooms, making it challenging for ESL students to competently grasp grammar (Misbah, Mohamad, Yunus, & Ya'acob, 2017).

Innovative instruction and learning approaches are necessary to devise an efficacious and engaging atmosphere for students to grasp and master grammar (Geramipour, Talebzadeh, & Mahdi, 2021; Murtiningsih & Failaih Zulfa, 2024). The evolution of ICT has demonstrated compelling prospects of improving students' learning outcomes (Ahmadi, 2018). The ICT mechanism allows self-paced and autonomous learning opportunities, which endorse problem-solving and critical thinking skills (Fazil & Said, 2020; Sakthivel, 2021). Interactive and attractive tools can sustain students' learning motivation and engagement (Zafar, 2019). The progressions of ICT and the rise of educational innovations and virtual simulations have transformed teaching and learning approaches, presenting a more self-motivated and dynamic learning experience (Modi, 2021).

### *1.2. Web-Based Learning and Grammar Education*

Technology plays a substantial role in 21st-century education, predominantly in learning and teaching (Watanapokakul, 2024). Nowadays, the accessibility of educational digital resources for English language teaching and learning is extensive. Most of these resources are available and can be utilized freely (Al Malki & Al-Hattali, 2022). These online resources, which can be seamlessly incorporated into English language instructions, improve students' interest and engagement, as well as the delivery of instructions and the entire process of teaching and learning (Bikowski, 2018; Yang, Meng, & Deris, 2025).

Previous studies have demonstrated the importance of integrating web-based learning into grammar instruction to enhance students' grammatical competence (Ed-Din Alian, Khodabandeh, & Soleimani, 2018; Mayanondha & Soontornwipast, 2020; Rokhayani, Rukmini, Hartono, & Mujiyanto, 2022; Sangeetha, 2023). Web-based learning substantially influences grammar education and its competence. Pinto-Llorente, Sánchez-Gómez, García-Peñalvo, and Casillas-Martín (2017); Khalil (2018) and Akhter, Zafar, and Saba (2022) highlight the significant improvement in the comprehension and application of grammar concepts through the strategic integration of digital resources. These studies demonstrate the importance of web-based learning platforms as effective instructional tools, particularly for grammar education. The current study aims to address the identified gap in previous research concerning the use of web-based learning environments in teaching grammar to pre-university students.

Moreover, the majority of prior studies on web-based learning and grammar education focused on undergraduate students. Nurhayati (2019); Kuzmina and Vinčela (2021); Windsor (2021) and Hendriani, Na'imah, Yunita, Yulnetri, and Putra (2023) noted the emphasis of most studies on the context of higher education. Only a few studies have focused on school children and working adults, such as those by Ed-Din Alian et al. (2018) and Mayanondha and Soontornwipast (2020). A pre-university or foundation level is a key academic stage between secondary school and higher education that has been critically overlooked in the literature. Thus, this study targeted the application for pre-university students.

### *1.3. Development and Validation of Expert Evaluation Instrument for Web-Based Grammatical Competence Module*

According to Kartal and Uzun (2010), a quality language learning website features three key attributes, which are aligned with the core principles of a web-based learning platform as noted by Hadjerrouit (2010) as follows: "the integration of content, technology, and pedagogy into a system that supports learning." The first attribute involves the physical elements of the website in terms of the general layout and structure, such as the ease of using online tools, a smooth interface, easily accessible materials, and appropriate color use to avoid eye strain. The second attribute involves the contextual features of the website regarding the content, such as the inclusion of exercises and practices for different grades, the ease of providing contributions and feedback, and updated learning materials of different forms and types for various levels, subjects, and learner types. The third attribute involves the pedagogical elements of the website concerning learning components, such as the conciseness and intelligibility of instructions and explanations, the delivery of informative, reinforcing, and constructive feedback, level-appropriate and applicable materials according to the needs, scope, and objectives of the platform, and alignment with educational innovation.

According to Kartal and Uzun (2010), this study developed a 45-item evaluation instrument with four standards for quality websites for language learning, namely design, technical aspects, content, and pedagogy. Figure 1 presents the adapted standards that were utilized in the study's development and validation of the evaluation instrument.

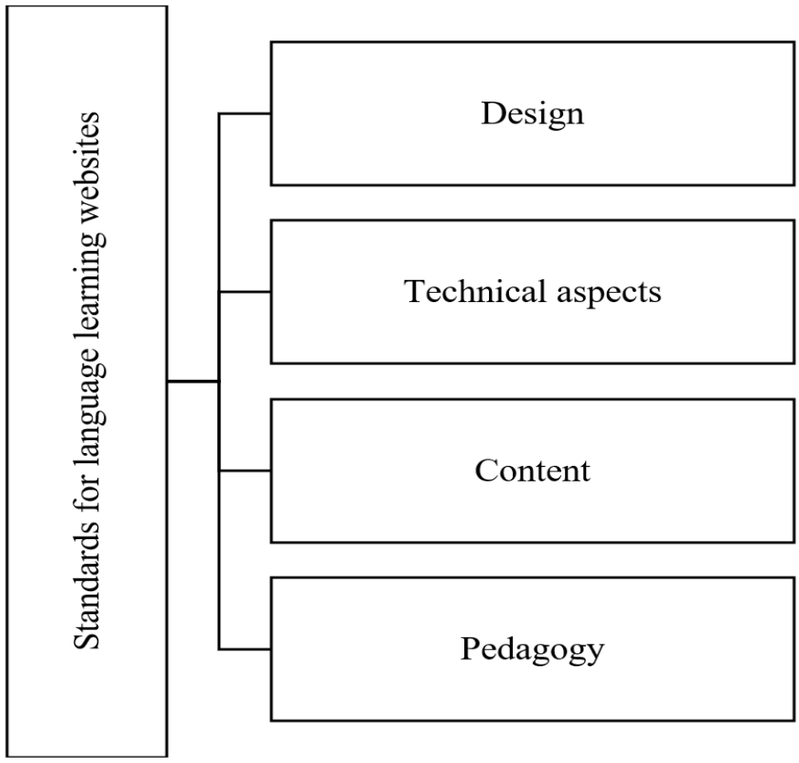


**Figure 1.** Standards for quality language learning websites
**Source:** Kartal and Uzun (2010).

## 2. Methodology

The universal validity of an instrument must be ascertained (Yusoff, 2019). Accordingly, there are construct validity, criterion-related validity, and content validity (Lau, Hashim, & Md Yunus, 2023). Among these different constructs, content validity should be prioritized in an instrument's development and validation (Yusoff, 2019). Ramli, Talib, Hassan, and Manaf (2020) described content validity as the assessment of the suitability of every item incorporated in the developed instrument. Content validity indicates the items' delineation and relevance in assessing the intended outcomes (Kamaluddin, Nasir, Sulaiman, Khairudin, & Zamani, 2017).

An instrument in this study was developed and validated to assess a web-based grammatical competence module for pre-university ESL students. According to Lynn (1986), this study employed a two-step procedure to measure the content validity of the instrument: instrument development and instrument validation. The primary step ensured the construction of items. The subsequent step focused on assessing the validity of the content of each item and the instrument as a whole. Most prior studies on instrument development and validation also employed a transitory manner (Yusoff, 2019). In this study, six experts were appointed and required to provide their expert feedback and ratings on the adapted constructs' relevance in the developed instrument. The content validity index (CVI) yields clear insights that can be utilized for item modification or deletion, which explains its application in measuring content validity in most studies (Polit & Beck, 2006; Polit, Beck, & Owen, 2007; Zamanzadeh et al., 2015), including the current study. The following subsections outline the development and validation of the evaluation instrument for a web-based grammatical competence module in this study.

### 2.1. Step 1: Instrument Development

According to Morgado, Meireles, Neves, Amaral, and Ferreira (2017), the deductive approach is commonly employed in instrument development to construct items. Thus, this study opted to deductively construct the items for the instrument based on the discoveries of prior studies, such as. Hinkin (1998) and Seraji and Nejadsadeghi (2022). Besides, all constructs must be accurately defined to facilitate the next step of instrument validation (Bustamante & Rubio, 2017; DeVellis, 2017), which is typically taken into account in item construction and validation (Mohd Yusoff & Tengku Ariffin, 2023). In this study, design (10 items), technical aspects (10 items), content (12 items), and pedagogy (11 items) were identified as the key constructs. These constructs were adapted from Kartal and Uzun (2010) standards for quality websites for language learning while the items in the instrument were adapted from Fuad (2019) and Mohd Fisal, Aziz, and Mohd Said (2024) with respect to the study's focus on developing and validating an evaluation instrument for a web-based grammatical competence module, this 45-item instrument also included two open-ended items on the strengths and possible shortcomings of the website. As the study targeted pre-university ESL students who are subject-matter specialists in ESL and linguistics, the evaluation instrument was developed in English. Table 1 presents the item labels and their respective descriptions.

**Table 1.** Labels of items and their respective descriptions of the instrument.

| Item label | Description of items |
|---|---|
| Part A: Design | |
| A1 | The design of MODUGRAM is suitable for pre-university ESL learners to learn grammar for their competency. |
| A2 | The images used on MODUGRAM are suitable for the content. |
| A3 | The colors used on MODUGRAM are suitable for learning. |
| A4 | The texts used on MODUGRAM are consistent throughout all pages. |
| A5 | The graphics used on MODUGRAM are consistent throughout all pages. |
| A6 | The videos used on MODUGRAM are consistent throughout all pages. |
| A7 | The animations used on MODUGRAM are consistent throughout all pages. |
| A8 | The type of fonts used on MODUGRAM is easy to read. |
| A9 | The size of fonts used on MODUGRAM is easy to read. |
| A10 | The overall design of MODUGRAM is attractive. |
| Part B: Technical aspects | |
| B1 | The layout of MODUGRAM is easy to follow. |
| B2 | The module is well-organized. |
| B3 | The module makes it easy for users to find the information needed. |
| B4 | The section to give feedback or comments to the researcher through email functions. |
| B5 | The options available on the menu are displayed when clicked. |
| B6 | The external websites are displayed when clicked. |
| B7 | Clicking to browse MODUGRAM transitions smoothly. |
| B8 | The audios on MODUGRAM play smoothly with a single click. |
| B9 | The videos on MODUGRAM play smoothly when clicked. |
| B10 | The user interface is user-friendly. |
| Part C: Content | |
| C1 | The contents used are appropriate for curriculum in education. |
| C2 | The contents used are appropriate to the learning objectives. |
| C3 | The contents used are appropriate for pre-university ESL students' proficiency level. |
| C4 | The contents used are appropriate for pre-university ESL students' schemata. |
| C5 | There are no typographical errors that could lead to misunderstanding. |
| C6 | There are no spelling errors that could lead to misunderstanding. |
| C7 | The contents include grammar learning exercises for practice opportunities. |
| C8 | The contents include assessment sections for testing students' comprehension. |
| C9 | The contents are presented through various types of media. |
| C10 | The information on MODUGRAM is accurate. |
| C11 | The information on MODUGRAM is sufficiently up-to-date for their intended purposes. |
| C12 | The external links on MODUGRAM are credible. |
| Part D: Pedagogy | |
| D1 | The information provided on MODUGRAM is easy to understand. |
| D2 | The grammar exercises on MODUGRAM are suitable for different proficiency levels of pre-university ESL students. |
| D3 | The instructions on MODUGRAM are direct. |
| D4 | The grammar exercises on MODUGRAM are thoroughly guided. |
| D5 | The grammar exercises on MODUGRAM provide instant feedback. |
| D6 | The materials designed are in line with current technological tools for learning. |
| D7 | The materials provide enough stimuli to promote memory retention. |
| D8 | The materials reflect the scope of MODUGRAM. |
| D9 | The materials reflect the goal of MODUGRAM. |
| D10 | MODUGRAM is interesting to be explored as a resource for learning grammar to enhance competency. |
| D11 | MODUGRAM allows students to be self-directed learners in the absence of an instructor. |
| Part E: Open-ended | |
| E1 | What are the biggest strengths of the web-based grammatical competence module (MODUGRAM)? |
| E2 | What are the adjustments needed to improve the web-based grammatical competence module (MODUGRAM)? |

### 2.2. Step 2: Instrument Validation

The study proceeded with a quantitative approach to assess the items following the development of the instrument. In line with the recommendations put forward by Heale and Twycross (2015) and Yusoff (2019), field

experts were appointed to review the appropriateness of the content with respect to the goal of evaluating the web-based grammatical competence module. The appointed field experts must be adept at concepts, theories, and issues related to the subject matter and instrument development methods. Lynn (1986) and Zamanzadeh et al. (2015) endorsed assigning five to 10 content specialists to appropriately deal with the agreement required in the review of the instrument. The involvement of more than 10 experts is likely to reduce the chance of reaching an agreement (Polit & Beck, 2006). This study opted for a panel of six experts in the area of education for instrument validation. These experts were selected based on their expertise in the fields of Teaching English as a Second Language (TESL), English language studies, curriculum and instruction, computer science, and information technology. Table 2 displays the experts' background in detail.

**Table 2.** Details of selected field experts.

| Expert | Position | Field | Institution |
|---|---|---|---|
| 1 | Senior lecturer | Computer science | Centre of Foundation Studies, Universiti Teknologi MARA (UiTM) |
| 2 | Senior lecturer | English language studies | Universiti Teknologi MARA (UiTM) |
| 3 | Lecturer | TESL | Politeknik Hulu Terengganu, Malaysia |
| 4 | Senior lecturer | Curriculum and instruction | Universiti Teknologi MARA (UiTM) |
| 5 | Senior lecturer | Information technology | Universiti Teknologi MARA (UiTM) |
| 6 | Course coordinator | Computer science | Universiti Teknologi MARA (UiTM) |

A four-point rating scale was utilized rather than a three- or five-point rating scale to avoid a neutral point (Polit & Beck, 2006; Polit et al., 2007). Each expert was requested to rank the relevance of each item as (1) not relevant, (2) somewhat relevant, (3) quite relevant, or (4) highly relevant, without the need to consult other experts. Each completed instrument was sent back to the researchers via WhatsApp or email following the validation of the questionnaire survey by the panel of experts.

Meanwhile, there are two methods of calculation for S-CVI. Polit and Beck (2006) specified dividing the totality of elements by the I-CVI (the average method) total. Polit and Beck (2006) also introduced the method of universal agreement (UA), which involves dividing the items' totality by the number of items deemed relevant by experts. According to Gilbert and Prion (2016), ratings of 1 or 2 were logged as 0, but ratings of 3 or 4 were marked as 1. A dichotomous scale was created. The number of experts scoring the instrument was divided by the number of agreements received for each item with a "1." I-CVI, however, also has the potential for rater agreement to occur by accident. According to the recommendations made by Polit and Beck (2006) and Polit et al. (2007), CVI should be at least 0.83 in the case of at least six experts (Table 3). The next section presents the results of instrument validation following the analysis conducted in Microsoft Excel using the methods described above.

**Table 3.** Number of experts and their implications on satisfactory CVI cut-off values.

| Number of experts | Satisfactory CVI cut-off value | References |
|---|---|---|
| 2 | Minimum 0.80 | Davis (1992) |
| 3–5 | Should be 1 | Polit et al. (2007) and Polit and Beck (2006) |
| Minimum 6 | Minimum 0.83 | Polit et al. (2007) and Polit and Beck (2006) |
| 6–8 | Minimum 0.83 | Lynn (1986) |
| Minimum 9 | Minimum 0.78 | Lynn (1986) |

**Source:** Yusoff (2019).

## 3. Results

Kartal and Uzun (2010) standards for quality websites for language learning were adapted and incorporated into the study's evaluation instrument, resulting in four constructs and 45 items. Table 4 presents the experts' ratings for each item and the calculated CVI for the validation of the developed instrument.

### *3.1. Item-Level Content Validity Index (I-CVI)*

Firstly, this study assessed the validity and relevance of the items based on I-CVI. The I-CVI results are presented in a single column. The results were determined by the total cases of ratings of 3 (quite relevant) and 4 (highly relevant), which were all coded as 1. According to Table 4, 45 items across four constructs and the open-ended section in the instrument recorded a total I-CVI of 44.49.

### *3.2. Scale-Level Content Validity Index (S-CVI)*

This study also computed S-CVI (average) and S-CVI (UA). Table 4 shows that all six experts agreed on the relevance of 42 items (I-CVI = 1.00), yet slightly disagreed on three other items (B3, B10, and C5), resulting in an I-CVI of 0.83. Minor modifications were made to some items, such as removing redundant words and rephrasing certain words for better comprehension and alignment with the study's context.

The recorded I-CVI and S-CVI from six experts in this study satisfied the acceptable cut-off CVI values (Polit & Beck, 2006; Polit et al., 2007). Polit et al. (2007) and Polit and Beck (2006) also suggested item removal if the outcomes fail to satisfy the threshold. To achieve the cut-off value, each item must be rated either 3 or 4. Based on the outcomes (S-CVI (relevance) = 1) displayed in Table 5, all 45 items were retained in this study.

**Table 4.** Content Validity Index (CVI) calculation.

| Item/ Expert | Expert 1 | Expert 2 | Expert 3 | Expert 4 | Expert 5 | Expert 6 | Experts in agreement | I-CVI | Universal agreement (UA) |
|---|---|---|---|---|---|---|---|---|---|
| A1 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| A2 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| A3 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| A4 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| A5 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| A6 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| A7 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| A8 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| A9 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| A10 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| B1 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| B2 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| B3 | 1 | 1 | 1 | 0 | 1 | 1 | 5 | 0.83 | 1 |
| B4 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| B5 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| B6 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| B7 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| B8 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| B9 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| B10 | 0 | 1 | 1 | 1 | 1 | 1 | 5 | 0.83 | 1 |
| C1 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| C2 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| C3 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| C4 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| C5 | 1 | 1 | 1 | 0 | 1 | 1 | 5 | 0.83 | 1 |
| C6 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| C7 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| C8 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| C9 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| C10 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| C11 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| C12 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| D1 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| D2 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| D3 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| D4 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| D5 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| D6 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| D7 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| D8 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| D9 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| D10 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| D11 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| E1 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| E2 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 |
| Proportion relevance | 0.98 | 1 | 1 | 0.96 | 1 | 1 | **Sum of I-CVI** | 44.49 | 45 |
| Average item proportion deemed as relevant by six experts | | | | | | | | | |

**Table 5.** Sum of I-CVI and UA.

| | | | |
|---|---|---|---|
| I-CVI sum | 44.49 | UA sum | 45 |
| S-CVI average (I-CVI Sum/Number of items) | 0.99 | S-CVI relevance (UA Sum/Number of items) | 1 |

## 4. Discussion

This preliminary study developed and validated an evaluation instrument for a web-based grammatical competence module, specifically for pre-university ESL students, addressing the gap in the evaluation of web-based grammatical competence modules. The comprehensive procedure of instrument development and validation ensured the content validity of the developed instrument prior to a pilot study or field study. Researchers involved in the development of the scale and instrument were committed to constructing quality items that meet the requirements of the content validity procedure. The adaptation of Kartal and Uzun (2010) standards for quality websites for language learning produced four constructs and 45 items for the instrument. A qualified expert panel was then selected to be part of this study, Polit et al. (2007). Six experts unanimously validated the instrument and agreed on the relevance of all 45 items. The CVI calculation revealed that all items satisfied the recommended threshold (cut-off value of 0.83) by Polit and Beck (2006) and Polit et al. (2007). The instrument was further improved in response to the experts' comments.

Opting for S-CVI may be more favorable, but it was deemed justifiable to employ S-CVI (average) for the assessment of scale-level CVI. The involvement of many experts creates an unduly stringent requirement for universal agreement (Rubio, Berg-Weger, Tebb, Lee, & Rauch, 2003). It may be deemed a precautionary approach to impose universal agreement, especially in the case of potential bias or lack of comprehensibility among the experts.

Nonetheless, despite its intrusiveness, this study reported the outcomes of S-CVI of both methods. The study's findings enriched the prevailing works on the evaluation of web-based grammatical competence modules. Furthermore, the validated instrument would substantially benefit ESL teachers or researchers in the same field to evaluate its relevance for use in their language teaching methods, particularly regarding web-based grammatical competence modules.

This study yielded several key implications. Firstly, the reported outcomes of CVI (I-CVI and S-CVI) confirmed the developed evaluation instrument's content validity for the web-based grammatical competence module targeting pre-university ESL students. Secondly, considering the implication of English as an international language, this validated evaluation instrument provided a pertinent basis for English language teaching and learning. Thirdly, this validated evaluation instrument would significantly benefit English language teachers and instructors in the construction and application of web-based grammatical competency modules. Mastering the English language starts with mastering grammar (Abdulhassan et al., 2024; Asifayanti et al., 2021; Watanapokakul, 2024). Considering that the current students are of Generation Z, leveraging ICT in education is pivotal and inevitable.

Moreover, the adaptation of Kartal and Uzun (2010) standards for quality websites for language learning ensured relevance, as these standards covered the motivations of ESL teachers and instructors for their students within the context of web-based grammar learning. With these standards in place, teachers can be accountable for making sure that their students achieve the learning outcomes and are grammatically competent. However, it should be noted that technological platforms and devices should not take over the fundamental roles of instructors in guiding their students to achieve greater learning outcomes (Gharehblagh & Nasri, 2020).

## 5. Conclusion

This preliminary study developed and validated an evaluation instrument for a web-based grammatical competence module, specifically for pre-university ESL students. This study underscored the significance of technology in education towards cultivating an active and engaging learning atmosphere within the context of sustainable education. The delivery of high-quality education addresses the fourth educational target of one of the SDGs (Rosa, 2017). In line with that, (Fauzi & Asi, 2025), the importance of the sustainability of language instructions in learning and mastering English competently was highlighted, which was taken into account in this study.

Content validity may be subjective, but its outcomes offer the required objectivity. In this study, experts' adeptness, professional experience, and solid conceptualization of each construct, as well as high-quality items for the instrument, were meticulously selected for instrument validation (Davis, 1992; Zamanzadeh et al., 2015). Six appointed experts offered their expert feedback and recommendations for the refinement of the developed instrument. These experts were provided with clear instructions on the fundamentals and rating work required for the instrument validation (Lynn, 1986; Yusoff, 2019). The calculation of S-CVI was also reported in a transparent manner. However, the instrument's reliability was not explored in the present study. Therefore, it is recommended to test its reliability among ESL and linguistics experts from diverse backgrounds. Besides that, the developed instrument may be utilized in a pilot study and field study after the necessary modifications to sentence structure or other specific aspects are made accordingly. Researchers from related domains may also utilize the instrument as a cross-reference to modify the measurement of CVI for instrument validation.

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