ESL Pre-university Learners' Needs Analysis for Web-based English Academic Vocabulary Learning Resource

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Abstract. A needs analysis will assist ESL practitioners in designing instructional materials more efficiently by filling in the gaps where language learning is lacking. By adapting Hutchinson and Waters' (1987) needs analysis model, this study investigates ESL pre-university learners' English academic vocabulary learning needs as regards their attitude, learning experience, preferred learning method, and preferred content for a web-based learning resource. A questionnaire survey was distributed to 117 ESL Life Sciences Foundation students from a foundation studies centre in Kuala Lumpur. The quantitative data collected were analysed descriptively using SPSS Version 26. The findings showed that the learners had positive attitudes towards learning academic vocabulary. Even so, they faced language issues rooted in their lack thereof, particularly in productive skills, such as academic speaking and writing. Their current implicit ways of acquiring academic words and limited resources need to be revised. They also displayed high interest and readiness to explore other learning means, such as a web-based learning resource. The learning needs in the resource include presenting academic words in contexts through sample sentences and by using basic English words, such as synonyms. Additionally, learners need various vocabulary learning exercise types and multimedia. The study informs ESL practitioners on the criteria and elements to be considered to design, develop, and successfully deliver academic vocabulary instruction that is effective, practical, and contextualised.

Keywords: English academic vocabulary; needs analysis; ESL pre-university learners; web-based learning resource

1. Introduction

Malaysian postsecondary institutions demand a greater emphasis on academic language due to its usage in the classroom as part of instructions, reading, discussions and assignments. Academic vocabulary is the key component of said language (Truckenmiller et al., 2019). According to Charles and Pecorari (2016), academic vocabulary refers to commonly used words in academic discourses,

but less frequently used in general English. Thus, its mastery would necessitate learners' ability to accurately comprehend and produce academic discourses (Nation, 2013), especially for those pursuing university-level programs in English-medium settings (Coxhead, 2021). Over the years, numerous studies have shown the role of academic vocabulary knowledge in improving learners' academic reading comprehension (Lawrence et al., 2022), academic writing (Csomay & Prades, 2018; Therova, 2021), listening comprehension (Dang, 2022; Ha, 2021), speaking assessments, such as presentations or debates (Smith et al., 2020; Yunus et al., 2016) as well as overall academic accomplishments (Skjelde & Coxhead, 2020).

However, Malaysian English as a Second Language (ESL) tertiary learners have gained little to no academic word knowledge and awareness, as shown by past studies (e.g., Abmanan et al., 2017; Choo et al., 2017; Harji et al., 2015; Sulaiman et al., 2018). One possible cause is the lack of exposure and opportunities to learn academic vocabulary during their schooling, as school textbooks rarely include such words (Manan et al., 2013; Noorizan et al., 2017). Thus, many school leavers begin post-secondary education with a substantial deficit in academic words. Pre-university level students wishing to continue their studies must take the Malaysian University English Test (MUET), a national English language proficiency test. However, Karnine et al. (2022) found that students often need help with the test due to their lack of vocabulary knowledge. Although learners may anticipate formal instructions on academic vocabulary, as they progress through higher education, the reality may not, however, meet their expectations.

Terpstra-Tong and Ahmad (2018) noted an apparent disconnect between high school education and university requirements in Malaysia, particularly regarding the lack of independent learning experience and insufficient English proficiency. At the pre-university level, English language learning often involves activities that require learners to read academic materials independently, with the expectation that they will acquire academic words through reading. However, ESL learners may struggle to identify which words to concentrate on while reading, as they cannot comprehend words' importance or usage frequency (Kaur, 2020). This results in heavy reliance on their lecturers for lexical input, leading to the passive acquisition of vocabulary and hindering the retention of new lexical input due to the minimal depth of processing and engagement (Kaur, 2013, 2020; Mutalib et al., 2014). Therefore, incidental academic vocabulary acquisition among ESL post-secondary learners may not be impactful enough. Hence, institution-recommended approaches, curricula or resources do not necessarily correspond to learners' needs.

In this regard, it is necessary to adopt a more direct, explicit and purposeful and systematic approach to academic vocabulary learning among ESL post-secondary learners (Aldawsari, 2017; Coxhead, 2021; Yunus et al., 2016). Taking into consideration the Malaysian Education Blueprint's 7th shift regarding the use of Information Communication Technology (ICT) (MOE, 2015), it is apt for explicit academic vocabulary instructions to integrate technology. In this sense, developing online supplementary materials would allow learners to practise vocabulary independently, whilst increasing their motivation for continued

learning (Krishan et al., 2020; Wu, 2015). Therefore, technology has increasingly become more appealing to the current Gen Z post-secondary learners, who are familiar with the use of digital technology and the internet.

While many studies have focused on using technological tools to facilitate practical vocabulary learning for language learners, less attention has been placed on researching the potential of self-instructed web-based learning resources (WBLR) for the English academic vocabulary. When learners experience language learning difficulties, providing instructional intervention that can address the specific learning issue affecting the targeted learners is necessary. However, developing specific instruction or materials for a particular group of learners should not solely rely on past experiences and preconceived conceptions (Mahzan et al., 2020). Additionally, Terpstra-Tong and Ahmad (2018) found that Malaysian first-year students in the transition period also experience adjustment issues related to research, time management, and critical thinking. Therefore, the proliferation of a WBLR for academic vocabulary learning could potentially facilitate their acclimatisation academically.

Thus, this research is preliminary research with the intention of designing and developing a supplementary academic vocabulary WBLR for ESL pre-university learners. It seeks to investigate the needs of ESL pre-university learners in learning English academic vocabulary, as the initial focal step before developing the resource. The data acquired through needs analysis would provide a solid foundation for the design of the resource. Since this study is only the first stage of a larger developmental research project, the design and development stages of the instructional product to address the underlined learning difficulties are outside the scope of this article.

2.The Literature Review
2.1 Needs Analysis
Needs analysis has become essential to English Language Teaching, especially in the material development process (Misesani et al., 2020). It is thought to be a prerequisite to developing instructional materials (Ibrahim, 2020; Suriaman & Tahir, 2019). In order to create effective course materials and activities for language learning, it is vital to recognise what the learners need (Sönmez, 2019). Needs analysis, or needs assessment, refers to activities involved in gathering the information done prior to, and as the foundation of curriculum or material development, in order to meet the learning requirements of a particular group of students (Brown, 1995; Hariyadi & Yanti, 2019).

While designing intervention materials, needs analysis results inform designers of learners' current knowledge, learning perceptions, learning styles and interests. By considering these elements, learners can fully engage in their learning, thereby increasing their motivation and task engagement (Mahzan et al., 2020). Nevertheless, many teachers lack the necessary expertise in the methodology and design processes; and this might lead to insufficient learning opportunities for their learners (Garreta-Domingo et al., 2018). Conversely, teachers can make reliable and accurate assessments of learners' present language proficiency, linguistic needs and wants, and discover any learning

barriers when they have sufficient knowledge on how to carry out a thorough needs analysis.

Previous studies have conducted needs analysis to identify learners' needs in learning English. Mahbub (2018) discovered that the English teaching methods used in an Indonesian vocational high school could have been more productive; since they failed to meet learners' expectations. Menggo et al. (2019) and Suriaman and Tahir (2019) conducted a needs analysis to create academic-English-speaking materials. They found that students needed materials to prepare them for future studies and career needs, particularly in effectively communicating in English. In order to improve learners' English language competency, Destianingsih and Satria (2017) and Mahzan et al. (2020) conducted a needs analysis research to develop digital or web-based learning materials. They found that learners had poor vocabulary levels and wanted to learn English mainly through online learning materials. Kakerissa and Lengkanawati (2022) analysed non-English department students' needs. They discovered that they lacked vocabulary knowledge and that lecturers needed to be aware of learners' wants and needs, in order to prepare materials that catered to those needs. Essentially, these studies enlighten ESL practitioners on the significance of considering the targeted learners' needs, in order to develop and successfully deliver effective instructions or materials.

According to Diana and Mansur (2018), there are four models of needs analysis recognised by scholars, namely: Target-Situation Analysis, Present Situation Analysis, the Hutchinson and Waters Model, and Dudley-Evans and St John's Model of Needs Analysis. Target-Situation Analysis (TSA) focuses on students' needs at the end of the language course (Robinson, 1991). Present-Situation Analysis (PSA) identifies the gap between the present and the target situation by determining the students' language proficiency and strengths and weaknesses at the start of the language course (Robinson, 1991). Meanwhile, Dudley-Evans and St John's (1998) Model of Needs Analysis provides personal information on the learners, language information of the target situation, professional information about learners, learners' lack, learners' needs from the course, language-learning needs, and how to communicate in the target needs.

Finally, Hutchinson and Waters' (1987) Model defines needs analysis by two main aspects: (i) Target Needs and (ii) Learning Needs. The former refers to what learners are required to do in the target situation; while the latter refers to what the learner needs to do in order to learn. Target Needs consist of necessities, lacks and wants. 'Necessities' are what learners must know to function effectively in the target situation. 'Lacks' refers to the gaps between the learners' target proficiency and their existing proficiency. 'Wants' fit into the subjective needs of what the learners want to learn.

2.2 Challenges in Learning the Academic Vocabulary
Academic vocabulary learning has consistently been overshadowed by other language skills in university English proficiency courses, even as early as pre-university. This is evident in the scarcity of emphasis, input, exposure or direct instructions on academic words in the existing classrooms (Choo et al., 2017;

Sulaiman et al., 2018; Yunus et al., 2016). As a result, learners cannot effectively learn the academic vocabulary; and they lose awareness of the significance thereof. Learning vocabulary is frequently tricky due to the vast number of words, but it is even more complicated when learners do not meet a specific vocabulary size. Malaysian ESL tertiary learners typically acquire only 3500-6000 word families (e.g., Ibrahim et al., 2016; Lim & Rashid, 2021; Tan & Goh, 2017), which is significantly lower than what is required for university-level academic success, as noted by Laufer and Ravenhorst-Kalovski (2010). As a result, learners may struggle to acquire academic words, especially considering that academic words are impossible to be gained through everyday language (Townsend et al., 2012).

In most cases, ESL post-secondary learners are expected to acquire academic words incidentally through reading activities. Albeit providing good lexical input (Nation, 2013), reading academic materials alone may not be very reliable for ESL learners to learn academic words (Aldawsari, 2017; Gallagher et al., 2019; Sulaiman et al., 2018); since this incidental approach has a low pick-up rate (Schmitt, 2008). Moreover, textbooks often include words that appear once without repetition, a vital element for vocabulary acquisition (Nation, 2013). Since explicit or intentional vocabulary learning benefits ESL learners more (Schmitt, 2010), many strategies for academic vocabulary learning in past studies have also stressed explicit ways (Goodwin et al., 2012; Knežević et al., 2020; Sibold, 2011; Sulaiman et al., 2018; Tan & Goh, 2020).

Furthermore, according to Gallagher et al. (2019), ESL learners are less likely to benefit from the incidental instruction of academic words. Hence, it is imperative for ESL pre-university learners to learn academic words explicitly by direct instructions, practices, and feedback.

2.3 The Use of Web-based Learning
ESL learners may find conventional vocabulary teaching methods boring and ineffectual (Srivani et al., 2022). Due to the demanding nature of traditional methods, web-based learning has emerged as a useful facilitative tool. Web-based learning is defined as learning experiences via the use of some technology (Moore et al., 2011). It can be utilised to carry out various learning activities, which can be integrated into a curriculum and thereby to supplement traditional courses.

Mundir et al. (2022) found that integrating online instruction is more effective than traditional instruction. Similarly, using online tools was found to be more enjoyable for students than traditional teaching methods; and it helps learners to retain words better (Poláková & Klímová, 2019). Hence, there are many reasons why ESL learners perceive the integration of web-based learning in a traditional classroom for vocabulary learning positively. For instance, multi-media materials are noted to increase the effectiveness of learning new words by assisting learners in developing self-learning methods for active and deeper learning (Fayaz & Ameri-Golestan, 2016), leading thereby to higher vocabulary gains (Knežević et al., 2020).

In post-secondary education, learners are trained to become independent learners gradually. In this regard, web-based learning can remove the sovereignty of a teacher-centred approach, giving learners more space to engage in vocabulary practices (Knežević et al., 2020). Teachers' absence is essential; as it forces learners to actively process newly learned words, instead of passively receiving them. Additionally, according to Al-Johali (2019), learners value learning both in and outside of class because it extends their time studying the materials. In essence, past studies have concurred with the contributions of web-based learning towards learners' vocabulary gains and positive perceptions and attitudes, consequently outperforming conventional teaching methods (e.g., Alhujaylan, 2021; Altiner, 2019; Bashori et al., 2021; Hajebi et al., 2018). Thus, this method is also feasible for application to struggling ESL pre-university learners.

3. Methodology
3.1 The Research Design
This paper is part of a larger developmental research project that aims to design, develop and evaluate a web-based academic vocabulary learning resource for ESL pre-university learners. The overall research project follows a mixed-method research approach (Creswell & Guetterman, 2021), with Design and Development Research (DDR) Type 1 (product and tool) (Richey & Klein, 2007) as the research design. DDR is the systematic study of design, development and evaluation processes to establish an empirical basis for creating instructional and non-instructional products (Richey & Klein, 2007). The ADDIE (Analysis, Design, Develop, Implement, Evaluate) instructional design (Branch, 2010) is utilised as the research framework to guide the development of the overall research project. ADDIE is integrated into the three main phases of DDR, which comprise the Analysis Phase (Phase 1), the Design and Development Phase (Phase 2), and the Implementation and Evaluation Phase (Phase 3).

This paper only reports on Phase 1, the Analysis (A) Phase, which involves gathering information, such as learning problems or an environment that can aid the development of materials that meet the learning requirements of a particular group of learners. In order to identify the ESL learners' academic vocabulary learning needs, this study adopts Hutchinson and Waters' (1987) model of needs analysis, which emphasises learners' target needs (necessities, lacks, wants) and learning needs. The model is adopted as it is specific, with clear target goals; and it is workable for identifying the needs of adult learners at the tertiary-level (Intan Baizura, 2014). A cross-sectional survey design was deemed appropriate for the current study. Therefore, a quantitative data collection method is utilised via a survey questionnaire. The data gathered serve as a basis for subsequent phases of the research project.

3.2. The Research Question
1. What are the learning needs of ESL pre-university learners in their English academic vocabulary learning?

3.3 Participant
117 Life Sciences ESL Foundation learners from one Centre of Foundation Studies in Kuala Lumpur were deliberately selected for this study (Gay et al.,

2012) based on a pre-determined selection of criteria from its total population of 570. At the time of the data collection, they were in their first semester (Academic Session 1 2022/2023) and enrolled in the semester's compulsory English proficiency course within their foundational program. To enter the program, they must achieve a minimum B grade (upper-intermediate) for the Sijil Pelajaran Malaysia (SPM) [Malaysian Certificate of Education] English paper, a national examination sat for by all fifth-form secondary school students in Malaysia before pursuing their pre-university studies.

3.4 The Research Instrument

A needs analysis questionnaire survey is utilised to identify ESL pre-university learners' academic-vocabulary learning needs. The questionnaire comprises 52 items (see Appendix 1). The first three items (Part A) aim to elicit background information, such as the personal and educational backgrounds of the learners. Meanwhile, the remaining items focus on their academic vocabulary learning needs, based on Hutchinson and Waters' (1987) needs analysis model. The model consists of four key elements, namely: necessities, lacks, wants, and learning needs, which are represented in the questionnaire as follows:

Table 1. Construct in needs analysis questionnaire

Elements	Construct in Questionnaire	Part	No. of Item
Necessities	Attitude Towards Learning Academic Vocabulary	B	7
Lacks	Experience in Learning Academic Vocabulary	C	11
Wants	Opinion Towards the Use of Web-based Learning in Learning Academic Vocabulary	D	14
Learning Needs	Favourable Content for the Web-based Learning Resource	E	17

As seen in Table 1, Part B of the questionnaire aims to identify learners' perceptions of learning academic vocabulary. Part C seeks to gather information about their experience learning academic English or academic vocabulary in the classroom. Part D focuses on their perceptions of using web-based learning to learn academic vocabulary. Part E aims to identify learners' preferred content for the suggested WBLR for academic vocabulary learning. All questionnaire items were adapted from several studies (e.g., Destianingsih & Satria, 2017; Krishan et al., 2020; Moiinvaziri, 2014; 'Izzati, 2019; Mahzan et al., 2020) and added by the researchers. Each item is presented on a five-point Likert scale, depending on the purpose of each construct.

3.5 Validity and Reliability

The draft version of the questionnaire was modified following suggestions from two content validation experts, one English language lecturer (UPM) and one Teaching English as a Second Language lecturer (UiTM), to ensure its validity. It was then piloted with 30 randomly selected ESL Foundation learners to test its reliability. Cronbach's Alpha would determine the reliability of the instrument. Table 2 shows the rule-of-thumb for assessing Cronbach's Alpha value (George & Mallery, 2003) utilised in this study.

Cronbach's Alpha	Internal Consistency
α ≥ 0.90	Excellent
0.80 ≤ α <0.90	Good
0.70 ≤ α < 0.80	Acceptable
0.60 ≤ α < 0.70	Questionable
0.50 ≤ α < 0.60	Poor
α < 0.50	Unacceptable

Cronbach's alpha value is obtained for the four constructs during pilot testing; it is above 0.7 (0.845, 0.711, 0.851, 0.935), which is an acceptable reliability coefficient. The questionnaire was revised accordingly; and then it was administered to the actual respondents. The reliability testing yielded a Cronbach's alpha value of above 0.7 (0.716, 0.779, 0.829, 0.844) for all the constructs, demonstrating thereby the high level of consistency between the respondents' answers.

3.6 The Data Analysis

During the research process, the researcher communicated with the English language teachers at the Centre. The researcher shared Google Form links to the needs analysis questionnaire and consent form with the teachers, who then helped administer them to their students. The data collected were stored on a personal laptop, encrypted and pass-word-protected. Only the main authors have access to the data. Descriptive statistics to generate frequency, percentage, mean, and standard deviation of the data collected from the needs analysis questionnaire were conducted via SPSS Version 26 to determine the academic vocabulary learning needs of the ESL Foundation learners. The study reports the results in the form of mean and standard deviation. For this purpose, the mean interpretation is based on Wiersma (2000), as seen in Table 3.

Table 3. Interpretation of mean range value

Mean Score	Level
1.00 to 2.33	Low
2.34 to 3.67	Moderate
3.68 to 5.00	High

4. The Findings

4.1 Demographic Information

The distribution of a Google Form link to the needs analysis questionnaire among the Life Sciences ESL Foundation students yielded 117 responses for analysis. Part A required respondents to fill in their background information. The analysis of their background information showed that most of the respondents (67.5%, n=79) are female, while 32.5% (n=38) are male. Since they belong to the same academic cohort, almost all the respondents (98.3%, 115) are 18 years old. Only 0.9% (n=1) of the respondents are 17 and 19 years old, respectively (M=18). Regarding their educational background, all the respondents had taken the SPM English Language paper, with 42.7% (n=50) scoring an A+ score, 53.8% (n=63) scoring an A, and the remaining 3.4% (n=4)

scoring an A-. The scores show that the respondents have a similar upper-intermediate proficiency in English.

4.2 ESL Pre-University Learners' Academic Vocabulary Learning Needs

This section summarises the findings obtained from the needs analysis questionnaire based on the four key constructs. The report on the findings of these constructs determines the Life Sciences ESL Foundation students' academic vocabulary learning needs. Table 4 presents the mean score for each construct in the questionnaire survey.

Table 4. Overall mean scores of constructs in the needs analysis questionnaire

Part	Construct	Mean	Std. Deviation	Interpret
B	Attitude towards learning English academic vocabulary	4.52	.361	High
C	Experience in learning English academic vocabulary	2.91	0.521	Moderate
D	Opinion of the use of web-based learning in learning English academic vocabulary	4.27	0.440	High
E	Favourable content for the web-based learning resource	4.21	0.456	High
	Overall mean score	3.98	.267	High

In Part B, the ESL learners displayed a high attitude towards learning academic vocabulary (M=4.52, SD=.361). They considered academic vocabulary important and knew its crucial role in learning various academic English skills, especially in academic writing (M=4.80, SD=.420). They also expressed a positive attitude towards having moderate to extensive practice with academic words (M=4.15, SD=.478). This indicates the 'necessity' of learning the academic vocabulary in their context.

However, in Part C, they had a moderate agreement on their experience of learning the academic vocabulary (M=2.91, SD=.521). Although the lack of academic vocabulary caused medium linguistic difficulties, particularly in academic speaking (M=3.43, SD=1.020) and academic writing (M=3.30, SD=1.053), the current teaching strategies, such as using a predetermined textbook, were highly inadequate in providing adequate and engaging academic vocabulary learning opportunities (M=3.88, SD=.939). Although few students used resources other than the textbook to learn the academic vocabulary (M=2.18, SD=1.014), many are still uncertain whether they are learning enough academic vocabulary input in the classroom (M=2.53, SD=.877). These findings indicate the inadequacy of their current classroom practices as regards academic vocabulary learning.

To fix these shortcomings, learners expressed their 'wants' for an alternative method in Part D. They showed a high level of agreement in using web-based learning for the learning of the academic vocabulary (M=4.27, SD=.440). They preferred learning academic vocabulary on web platforms rather than traditional methods (M=3.62, SD=.814). Additionally, they were equipped with

technology access (M=4.57, SD=.486) and the online skills (M=4.41, SD=o.618) required to access and utilise WBLRs with ease and efficiency. They also expressed a willingness to use WBLR for future academic vocabulary learning (M=4.48, SD=.583). These findings indicate an alignment in the learners' preferences, access and skills, which points to the suitability of using web-based learning to fulfil their 'wants' in learning academic vocabulary. Subsequently, this method would enable learners to learn the academic vocabulary independently and ubiquitously.

Building on their preferences and skills, the learners identified their 'learning needs' for the proposed WBLR in Part E. They showed high agreement on the favourable content for the WBLR (M=4.21, SD=.456). Regarding vocabulary learning input, the learners favoured various word aspects, such as sample sentences, word definition, pronunciation and spelling (M=4.38, SD=.573). Regarding vocabulary learning exercises, the learners favoured various exercise types, such as synonyms, multiple choices, matching words to definitions, games and quizzes (M=4.25, SD=.584). Regarding media types, the learners favoured multimedia, such as images, videos, audio and texts (M=4.01, SD-0.616). These findings indicate that learners require these types of content in order for them to learn academic vocabulary. Hence, the resource should include these elements, in order to capture and retain learners' interest and motivation.

In summary, these findings showed that the Life Sciences ESL Foundation students perceived their academic vocabulary learning needs are high (M=3.98, SD=0.267). Therefore, researchers have to ensure that the ESL learners' needs are met to ensure adequate and successful academic vocabulary learning.

5. Discussion
5.1 Necessities
ESL pre-university learners' attitude towards learning academic vocabulary is positive, as they consider it essential in all aspects of academic English, albeit to varying degrees. This finding concurs with Choo et al.'s (2017) study, where ESL tertiary students deemed AWL knowledge necessary in academic reading, writing, speaking and listening. Nonetheless, the learners in this study especially pointed out academic vocabulary knowledge's usefulness for improving academic writing. Thus, most learners communicated their expectations towards a moderate to extensive academic vocabulary practice. This supports Choo et al.'s (2017) claim that the AWL should be emphasised in Malaysian tertiary English language education, given the lack of prior exposure during schooling (Manan et al., 2013; Noorizan et al., 2017). Hence, it is 'necessary' for ESL pre-university learners to learn academic vocabulary to improve their academic English.

5.2 Lacks
However, learners' experience in learning academic English is not fruitful; since they face difficulties in academic speaking and academic writing, stemming from their limited academic word knowledge. This supports Karnine et al.'s (2022) study indicating that ESL tertiary learners struggle with MUET because of their limited vocabulary knowledge. According to Laufer and Ravenhorst-

Kalovski (2010), 10000-word knowledge is necessary for dealing with linguistic problems and the needs of higher-level studies. Nevertheless, past studies indicated that Malaysian ESL tertiary learners have inadequate academic words (e.g., Abmanan et al., 2017; Harji et al., 2015; Kaur, 2013; Sulaiman et al., 2018), hindering their comprehension or production of academic discourses accurately. Although their teachers frequently use textbooks, many learners find them insufficient for learning the academic vocabulary. This aspect is in tandem with Nation's (2013) claim that learners are unlikely to learn from textbooks that include terms that appear only once, as repetition is vital for vocabulary acquisition. The inadequacy of textbooks as the primary resource in the classroom is a significant limitation. As found by Therova (2021), reading resources play a vital role in the acquisition of new academic vocabulary items. Consequently, the learners resorted to alternative sources to gain lexical input, although many are still determining whether they are gaining any. Notably, Choo et al.'s (2017) study showed that many ESL learners exhibited minimal familiarity with academic word lists, thereby calling into question their comprehension of this lexical knowledge. Next, the learners in this study also find their current ways of learning academic words unengaging. This concurs with Hiew's (2012) finding that learners perceive textbooks-based vocabulary instructions as non-interactive and discouraging. These results are congruent with previous studies, thereby indicating that the academic vocabulary is not directly taught or emphasised in current English proficiency classes (Sulaiman et al., 2018; Yunus et al., 2016). Therefore, it is evident that the ESL classroom and its resources are 'lacking' in providing enough academic vocabulary input and learning opportunities for learners, which impedes their academic English performance.

5.3 Wants
To address the earlier shortcomings, the learners conveyed their opinions about using web-based learning for academic vocabulary. They showed a positive inclination towards this approach, stating that it is motivating and convenient compared to traditional methods. This corroborates previous studies, which posit that while learning vocabulary through traditional classroom instruction can be restrictive, online resources provide more accessible and engaging practices that can boost learner motivation for continued learning (Ali, 2018; Krishan et al., 2020; Tan & Goh, 2020). Learners' preference for web-based learning rather than traditional methods aligns with numerous past studies (e.g., Alhujaylan, 2021; Altiner, 2019; Bashori et al., 2021; Mundir et al., 2022). Moreover, the learners in this study possessed sufficient technological access, online skills, and interest in ubiquitous resources that should enable them to use and navigate a self-instructed WBLR efficiently, anywhere, at any time. This is significant, when given the emerging need for tertiary learners to extend their vocabulary learning independently beyond the classroom settings (Kaur, 2020; Sulaiman et al., 2018). Indeed, the learners 'want' to use web-based learning as a means to acquire academic vocabulary.

5.4 Learning Needs
Next, the learners expressed their preferences for the content of the proposed WBLR. They highlighted the importance of introducing academic words using

synonyms like general English words and within comprehensible contexts like sample sentences. This finding backs up Nguyen's (2020) assertion that although students could simply utilise contextual clues to infer meaning when reading academic textbooks, doing so is very challenging, especially when many other unfamiliar terms surround an unfamiliar word. Furthermore, the learners in this study preferred various vocabulary exercises. Past studies have shown that repetitive exposure to target words through different exercises can result in meaningful learning and better retention (Hashemzadeh, 2012; Mohd Tahir & Mohtar, 2016). Lastly, the learners expressed a preference for multimedia elements, particularly visuals. This is aligned with the findings of Bashori et al. (2021), who found that learners value coloured-backgrounds, images and visually-engaging user-interface, in order to enhance their vocabulary results. In sum, incorporating these preferred elements into the WBLR would help learners learn the academic vocabulary better.

6. Implications of the Study
The results of this study bear significant implications for the development of a web-based learning resource intended to assist ESL pre-university learners in learning the academic vocabulary. Firstly, learners found the academic vocabulary knowledge particularly useful for academic writing, as this is an area where they encounter the most language problems, due to their limited academic vocabulary. Moreover, they expect moderate to extensive frequency of academic-vocabulary practices. Thus, the WBLR should align with this frequency and include activities that necessitate the application of newly-learned academic words in writing sentences. Secondly, the learners in this study preferred web-based learning to traditional teaching strategies, thereby underscoring the relevance of including online resources in ESL classrooms that are often limited in vocabulary instructions. Thirdly, learners preferred academic words to be introduced, using synonyms like general English words and within comprehensible contexts, like sample sentences. Additionally, they preferred numerous interactive vocabulary activities and the inclusion of multimedia components.

These findings imply that to aid and improve learners' experience in learning academic vocabulary, developers of web-based academic vocabulary learning resources should emphasise the inclusion of these preferred elements. In addition, the study's focus on the necessity of independent academic vocabulary learning outside of the classroom highlights the significance of developing resources that permit ubiquitous access and self-navigability. By considering the learners' needs and preferences, developers can develop a more efficient and exciting web-based academic vocabulary learning resource to help ESL pre-university learners attain their academic English goals.

7. Limitations and Recommendations for Future Research
Despite the potentially significant implications, several limitations of this study must be highlighted. Firstly, the generalisability of the findings is limited, due to the study's small sample size. Secondly, the study was carried out in one Foundation institution only. Thus, caution is needed when drawing conclusions,

because these findings might not be generalisable across foundation-level student populations at other foundation institutions.

In order to overcome the limitations of this study, future research would benefit from using a broader and more varied sample of Foundation-level students from various institutions. Future research could also consider how well the preferred learning approaches identified in this study help students learn and retain their academic vocabulary. Besides, the effect of linguistic and cultural diversity on students' preferences for WBLRs should be explored in further studies. Next, to meet the needs and preferences of different students, the incorporation of artificial intelligence or personalised learning strategies into web-based academic vocabulary learning resources could also be investigated. Finally, using different data collection methods, such as interviews and classroom observation, is also advised in order to obtain more productive data.

8. Conclusion

The study has revealed some significant points for consideration when designing a WBLR to meet ESL pre-university learners' academic vocabulary learning needs. Firstly, acknowledging the usefulness of academic word-knowledge; learners expect frequent practices in their program. Secondly, they believe their academic writing and speaking skills are impacted by their lack of academic words. Thirdly, they are dissatisfied with the classroom's current academic vocabulary learning approaches, which involve implicit vocabulary acquisition through reading textbooks and other sources. Shortcomings include a lack of engagement in their current approaches and a lack of opportunity to develop their academic vocabulary using the textbook. Thus, learners require web-based academic vocabulary learning; as they prefer this explicit non-traditional method; and they have sufficient technology access and online skills. Finally, the learners prefer content that includes multiple facets of a word, various vocabulary-learning exercises and multimedia. Among the key details are to present academic words in contexts through sample sentences and to use basic English words as synonyms, in order to aid learners' word comprehension. The study's findings provide instructional developers with valuable insights and raise the awareness of the significance of learners' needs analysis to enhance their learning. It is a tool that provides instructors with a clear grasp of the learners' target and learning needs. In conclusion, acknowledging learners' needs allows material designers to comprehend their needs and shortcomings to bridge the gap between their current and the target proficiency.

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Appendix 1

NEEDS ANALYSIS QUESTIONNAIRE
(Respondent: ESL PRE-UNIVERSITY LEARNERS)

Dear students,

I am Farah Amirah Fisal, a PhD student (TESL) from the Faculty of Education, UKM. I am conducting a study to design, develop and evaluate a web-based learning resource (WBLR) for English academic vocabulary learning among ESL pre-university learners.

This survey aims to identify your **ENGLISH ACADEMIC VOCABULARY LEARNING NEEDS**. Your responses will help me better design the proposed WBLR.

Your participation is anonymous and voluntary. It is hoped that you will be able to respond with sincere answers. This survey may take at most 10 minutes to complete. Thank you.

PART A: PERSONAL BACKGROUND

Please tick [✓] in the boxes.

1. Gender:

   ☐ Male

   ☐ Female

2. Age:

   ☐ 18 years old

   ☐ 19 years old

   ☐ 20 years old

   ☐ Others: _____

3. English Language Grade in the SPM examination:

   ☐ A+

   ☐ A

   ☐ A-

   ☐ B+

   ☐ B

   ☐ C+

   ☐ C

   ☐ D

   ☐ E

   ☐ G

PART B: ATTITUDE TOWARDS LEARNING ACADEMIC VOCABULARY

This part focuses on your perceptions of learning English academic vocabulary in your context. For the following statements, please indicate your level of agreement based on the scale:

1	2	3	4	5
Strong Disagree (SD)	Disagree (D)	Neutral (N)	Agree (A)	Strongly Agree (SA)

		SD	D	N	A	SA
1.	English academic vocabulary is useful for me to understand academic texts.	1	2	3	4	5
2.	English academic vocabulary is useful for me to improve the quality of my academic writing.	1	2	3	4	5
3.	English academic vocabulary is useful for me to listen to class instructions better.	1	2	3	4	5
4.	English academic vocabulary is useful for me to participate in formal class debates and presentations.	1	2	3	4	5
5.	English academic vocabulary is useful for me to help me get good grades.	1	2	3	4	5
6.	English academic vocabulary is useful for me to improve my English language proficiency for future job purposes.	1	2	3	4	5

7. How much practice in the academic vocabulary do you expect to get? Please circle your answer.

1	2	3	4	5
None	Very minimum	Minimum	Moderate	Extensive

PART C: EXPERIENCE IN LEARNING ACADEMIC VOCABULARY

This part contains two sections. Read the instructions carefully.

SECTION 1: This section focuses on your language learning experience in the classroom about academic vocabulary knowledge. Please circle your level of frequency towards the statements based on the scale:

1	2	3	4	5
Never (N)	Rarely (R)	Sometimes (S)	Often (O)	Very Often (VO)

(i) Language-use experience How often do you experience the following?		N	R	S	O	VO
1.	I find it hard to understand the meaning of written academic texts due to limited academic vocabulary.	1	2	3	4	5
2.	I find it hard to understand class instructions due to limited academic vocabulary.	1	2	3	4	5
3.	I find it hard to listen to academic audio content due to limited academic vocabulary.	1	2	3	4	5
4.	I find it hard to do academic writing due to limited academic vocabulary.	1	2	3	4	5

5.	I find it hard to speak formally in debates and presentation due to limited academic vocabulary.	1	2	3	4	5
6.	I find it hard to perform non-academic activities in English due to limited academic vocabulary.	1	2	3	4	5

SECTION 2: This section focuses on your experience with learning/acquiring academic vocabulary in the classroom. Please circle your level of agreement towards the statements based on the scale:

1	2	3	4	5
Strong Disagree (SD)	Disagree (D)	Neutral (N)	Agree (A)	Strongly Agree (SA)

(ii) Learning Problem		SD	D	N	A	SA
7.	The instructor uses a textbook at all times.	1	2	3	4	5
8.	Learning academic vocabulary from the main textbook only is not enough for me.	1	2	3	4	5
9.	I do not use other supplementary resources to learn academic vocabulary other than the textbook.	1	2	3	4	5
10.	ESL classroom lessons do not provide enough academic vocabulary input for me.	1	2	3	4	5
11.	The current ways in which I learn academic vocabulary are not engaging enough.	1	2	3	4	5

PART D: OPINION ON THE USE OF WEB-BASED LEARNING IN ACADEMIC VOCABULARY LEARNING

This part seeks your perceptions of an alternative method of learning, web-based learning technology, for learning English academic vocabulary. Please circle your level of agreement of the statements based on the scale.

1	2	3	4	5
Strongly Disagree (SD)	Disagree (D)	Neutral (N)	Agree (A)	Strongly Agree (SA)

		SD	D	N	A	SA
Preference						
1.	I prefer studying academic vocabulary on a web platform than from books.	1	2	3	4	5
2.	I prefer doing web-based exercises than on paper exercises.	1	2	3	4	5
3.	I prefer to carry smartphones and laptops rather than books to the classroom.	1	2	3	4	5
4.	I feel more motivated to learn academic vocabulary on a web platform than from books.	1	2	3	4	5
Technology Access						
5.	I have access to electronic devices (e.g. computer, laptop, netbook, tablet, smartphone, home PC, etc.).	1	2	3	4	5
6.	I have internet access on my electronic devices.	1	2	3	4	5
7.	I am allowed to carry electronic devices to the classroom.	1	2	3	4	5
8.	My learning institution has Wi-Fi accessible to students.	1	2	3	4	5

Online Skills					
9.	I have the basic skills to operate a computer.	1	2	3	4	5
10.	I have the knowledge to look for information on the internet.	1	2	3	4	5
11.	I am comfortable when using a computer several times a week to participate in a learning activity.	1	2	3	4	5
12.	I have experience in using electronic devices with internet for language-learning purposes.	1	2	3	4	5
Future Use					
13.	If there is a web-based learning resource to learn academic vocabulary, I will use it.	1	2	3	4	5
14.	I want to be able to learn the academic vocabulary at any time and anywhere.	1	2	3	4	5

PART E: FAVOURABLE CONTENT FOR THE WEB-BASED LEARNING RESOURCE

This part presents a list of suggested content to be included in the web-based learning resource. Please indicate your preferences for these contents if they were to be included in the web resource by circling your level of preferences based on the scale.

1	2	3	4	5
Least Preferable (LP)	Slightly Preferable (SP)	Moderately Prefer (Mp)	Prefer (P)	Most Preferable (MP)

		LP	SP	MP	P	MP
Vocabulary Learning Input						
1.	Academic word list	1	2	3	4	5
2.	Definition of word	1	2	3	4	5
3.	Spelling	1	2	3	4	5
4.	Pronunciation	1	2	3	4	5
5.	Sample sentences					
Types of Vocabulary Learning Exercises						
6.	Multiple choice	1	2	3	4	5
7.	Matching words to definitions	1	2	3	4	5
8.	Word building	1	2	3	4	5
9.	Synonym & antonym	1	2	3	4	5
10.	Fill-in-the-blanks	1	2	3	4	5
11.	Crossword puzzle	1	2	3	4	5
12.	Vocabulary memorisation games	1	2	3	4	5
13.	Quiz	1	2	3	4	5
Type of Media						
14.	Text	1	2	3	4	5
15.	Image	1	2	3	4	5
16.	Audio	1	2	3	4	5
17.	Video	1	2	3	4	5

Thank you for answering this survey.