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Using E-modules to Support EFL/ESL Learning in Asian Contexts: A Systematic Literature Review

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ABSTRACT

The unprecedent prevalence of digitalization has an impact on learning modules, particularly with the shift from print modules to e-modules. Though there is amount of research dedicated to English learning modules, research on e-modules for EFL/ESL learning is still scarce. Hence, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines is used to guide the selection, screening, and reporting processes. The research objective is to synthesize the available literature, present the current stances of EFL/ESL learning e-modules, and identify gaps thoroughly scrutinizing documents from 2000 to February 2024. Three databased including Web of Science (WOB), Scopus and ERIC were reviewed, only with 15 articles meeting the inclusion criteria. The findings indicated that EFL/ESL learning e-modules were mostly related with two themes, namely English for specific purpose (ESP) and learner autonomy. Based on the findings, the review puts forward suggestions and gaps for future research.

KEYWORDS: learning module, e-module, EFL/ESL, systematic literature review, PRISMA

Introduction

Language learning is closely associated with historical and cultural contexts. The rise of technology-mediated learning environments has accelerated the transformative evolution in teaching and learning English as a foreign/second language (EFL/ESL) (Dressman & Lee, 2021). Recent years reforms of English learning have swept worldwide, including in Asia, where the largest population is learning English as a foreign or second language (Zhang et al., 2021). In Asia,

many educational initiatives have been implemented in response to this trend, among which technology-enhanced learning modules are recognized as a personalized approach (Arif et al., 2014; Brega & Kruglyakova, 2022).

Module was initially introduced by Russell (1974), defining it as a collection of instructional resources designed to address a singular conceptual unit of information. The primary objective of modules is to aid students in achieving well-defined goals, characterized by self-centeredness and self-paced learning. In the following decades, modules are being evolved from printed modules to a multimedia medium (Arif et al., 2014). Nonetheless, the integration of e-modules specifically tailored for English learning in the EFL/ESL context remains an area that has not been thoroughly explored or implemented.

E-module or digital module is a cutting-edge use of modern technologies, consisting of a set of non-print digital learning materials, systematically organized, and available for students to freely employ in addressing problems in their individualized approach (Wahyuni et al., 2023). It incorporates various interactive and social media components, featuring the display of images, educational animations, and audio learning, with the goal of nurturing not only subject-specific knowledge but also enhancing student engagement and fostering learner autonomy (Novia et al., 2022; Miao & Mao, 2018; Dewi et al., 2018; Wahyuni et al., 2023; Brega & Kruglyakova, 2022).

Particularly noteworthy is that the current generation of students, significantly differing from the prior generation for whom our educational system was originally designed for, is showing a growing preference for digital learning of English (Prensky, 2001; Donnelly & Fitzmaurice, 2005; Soyoof et al., 2023). The present generation are mostly post-00s, being closely related to digital technologies, and they tend to prefer e-modules to print modules (Suarsana & Mahayukti, 2013).

So far, there has been limited exploration of reviews on e-modules, with only a handful of studies examining subjects like Physics (Dewantara et al., 2021; Serevina et al., 2018), Accounting (Damanik & Hutasuhut, 2020), English (Dewi et al., 2022; Zainal & Yunus, 2021), and Geography (Wijayanto et al., 2023). Within the limited reviews on e-modules used for English learning, a comprehensive understanding of EFL/ESL learning through e-modules is lacking. The existing studies lack coverage of essential elements concerning e-modules, including design, development, utilization, learning outcomes, assessment, challenges, and influential elements. Notably, the limited reviews predominantly focus on highlighting the advantages of e-modules, leaving other critical dimensions unexplored.

For instance, a recent study by Novia et al. (2022) specifically focused on interactive multimedia within e-modules in senior high school settings. The study delineated various content types present in e-modules, encompassing text, dynamic images, animation, video, audio, and video games, all of which significantly contribute to the enhancement of English learning. The findings of the review indicated that e-modules have the potential to cultivate learner autonomy among contemporary students. While emphasizing the critical role of e-module design in the learning process, the review, yet it did not delve into the design and development of e-modules, offering insights solely into the advantages of integrating interactive media into e-learning. Another review conducted by Zainal and Yunus (2021), further underscores the advantages of employing e-modules in learning English speaking, specifically tailoring to the learning needs of university students. The review thoroughly outlines both the merits and challenges associated with the

utilization of e-modules in ESL learning. Similar to the findings of Novia et al. (2022), the results of this study affirm the positive impact of e-modules in fostering learner autonomy. It is noteworthy, however, that this review does not provide specific insights into the intricacies of e-module development.

So far, there is not a systematic literature review based on the current empirical studies to summarize the themes and gaps of e-modules among EFL/ESL learners. Thus, this present review offered a thorough and systematic examination of 15 articles, aiming to address existing gaps in the literature and presents an updated and comprehensive overview of the latest advancements of e-module for English learning. The selected time frame spans from 2000 to Feb. 2024 (Feb 8, 2024). In general, the significance lies in its rigorous review of prior research and its potential to serve as a guiding reference for researchers. By addressing specific research questions, the paper aims to provide valuable insights into the ongoing discussion on e-modules for English learning. The paper also aims to answer and provide insights into the following research questions:

RQ 1. What is the current pattern of e-modules for EFL/ESL learning?
RQ 2. What are the gaps of e-modules for EFL/ESL learning?

Method

In addressing the two questions, a systematic literature review was conducted following the guidelines of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), which encompassed a 27-item checklist, emphasizing transparency, inclusion and exclusion criteria, and four stages of identification, screening, eligibility, and inclusion (Page et al., 2021; Rethlefsen et al.,2021). Most importantly, the PRISMA not only proposed specific questions to be answered, but also enabled researchers to retrieve documents a huge database based on an accurate inclusion and exclusion criteria (Ramalingam et al., 2022).

Identification

The initial stage, referred to as identification, involves searching for related terms, synonyms, and variations for the keywords. In this present review, keywords were carefully chosen based on research questions and categorized into three specific domains, namely module, technologies, and language context. These domains were further extended with synonyms (or alternative terms) and variations to retrieve more potential documents. To search as many potential documents as possible, the Boolean operators AND and OR to incorporate these keywords as well as their variations into search strings (Soyoof et al., 2023). By this means, this stage has more alternatives or more relevant articles for retrieval using databases. To specify, considering the plural form of module and its variation, searching words were module* OR modular. In this current study, considering technologies assisted learning modules encompass many forms, thus the string should ensure an accurate coverage. To specify, the string is (electronic OR digital OR network OR internet OR computer OR online OR technology OR platform OR mobile OR e-learning. Documents other than English as a native language were searched by "English OR EFL OR "English as a foreign language" OR ESL OR "English as a second language"). As a result, 95 articles were retrieved in the initial stage (Feb. 9, 2024).

Table 1. The Boolean Expression

Database	Search string (Boolean expression)
Web of Science (WOS) Scopus ERIC	(e-module OR module* OR modular) AND (electronic OR digital OR network OR internet OR computer OR online OR technology OR platform OR mobile OR e-learning) AND (English OR EFL OR "English as a foreign language" OR ESL OR "English as a second language")

All research conducted from 2000 to February 2024 was carefully chosen through Web of Science (WOB), Scopus, and ERIC. They have been globally regarded as central databases in social science for their authority and quality, and all literature of which are peer-reviewed (Zhong & Abdullah, 2023; Dyment & Downing, 2020). Grey literature such as conference papers and theses retrieved from these three databases are also included. To locate additional articles, ProQuest and Google Scholar were consulted as sources of grey literature (Mahood et al., 2014). Subsequently, following the database searches, researchers engaged in manual searching, also known as "hand-searching" (Hopewell et al., 2007) by examining reference lists. This manual search aimed to identify specific studies that may not have been captured by the initial database searches (Kernagaran & Abdullah, 2022). This research spans 24 years, from 2000 to 2024, with Feb. 9, 2024 serving as the cutoff date. In this review, the screening of articles was conducted by two independent reviewers, and their findings reached an agreement.

Screening

Based on the inclusion and exclusion criteria (see Table 2), 49 articles retrieved from WOS and Scopus, and 46 articles retrieved in ERIC following "peer reviewed only" and "full text available on ERIC". Thus, 95 articles were obtained to be screened. In the beginning of this detection phase, 8 duplicated papers across both WOS and Scopus databases were eliminated. The remaining publications were then thoroughly examined to ensure they met the research's criteria. Subsequently, six eligibility criteria were strictly adhered to when selecting documents from different databases (see Table 2): i) EFL/ESL, ii) peer-reviewed articles, iii) study type, iv) student sample, v) database, and vi) year of publication (Sharif et al., 2019). Initially, 3 book chapters, were excluded. Then, 53 articles irrelevant with the research questions were excluded. Consequently, 33 articles met the criteria and were included in the screening stage. The inclusion and exclusion criteria are presented in Table 2.

Table 2. Inclusion and exclusion criteria of this study

Criteria	Inclusion	Exclusion
Language	English	Non-English
Time frame	2000-Feb 2024	Document before 2000
Study type	Empirical studies	Review papers
Publication	peer-reviewed journals	Books chapters
Database	Web of Science, Scopus, ERIC, ProQuest, and Google Scholar	Other databases
Discipline	EFL/ESL	Articles other than EFL/ESL

Eligibility

Automation tools (i.e. computer) were utilized for the identification and screening process, yet these two stages might lead to errors without manual intervention (Shaffril et al., 2020). The automation tools might include many irrelevant documents without accurate identification, and thereby it is necessary to conduct the eligibility process by manually selecting or excluding literature items inconsistent with specific criteria in Table 2. During this stage, the titles, keywords, abstracts, and texts were examined thoroughly to ensure all relevant articles to be included. 1 report other than English, 1 article before 2000, 1 article without full length, and 13 articles unavailable were excluded. After manual screening, only 15 articles (including grey literature) related to the research objectives were included.
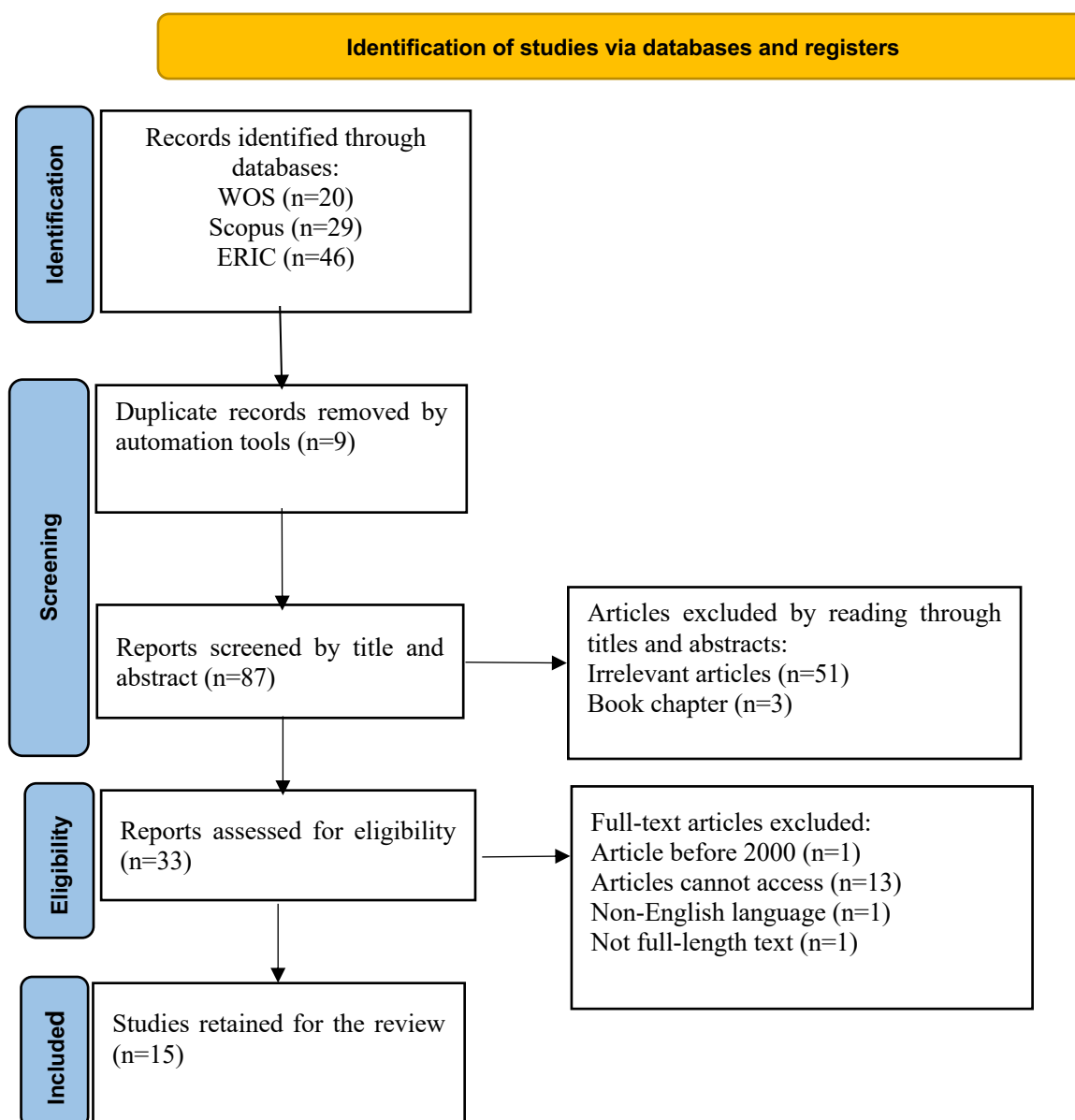

Figure 1. Flow diagram for systematic reviews literature research (adapted from Page et al., 2021)

To minimize bias and streamline the study selection process, this paper employed a method for choosing studies that relies on the application of Cohen's Kappa statistic. Using the same inclusion and exclusion criteria, two researchers separately coded the selected documents and calculated the Cohen's Kappa coefficient value (Pérez et al., 2020). The resulting value was 0.67, and according to Viera and Garrett (2005), scores ranging from 0.61 to 0.80 indicate an ideal agreement among researchers.

Data Analysis

In this section, the research presents the main findings based on the thematic analysis, which referred to the process of identifying patterns or themes within qualitative data (Maguire & Delahunt, 2017). The aim of thematic analysis is to recognize and explore themes, using them to discuss research findings. Thematic analysis involves six steps: firstly, gaining familiarity with the entire dataset; secondly, generating initial codes; thirdly, identifying potential themes; fourthly, reviewing relevant codes and data extracts under each theme; fifthly, defining and naming the themes; and finally, completing the write-up in the sixth step (Kiger & Varpio, 2020).

As a result, the entire dataset is categorized into 9 major themes: development of language skills, learner autonomy, English for Specific Purpose, assessment of e-modules, and perceptions of e-modules for English learning, advantages and disadvantages, challenges, education for sustainable development, and cross culture. By taking a closer look at each theme, it helps to find potential research directions.

Findings

RQ 1. What is the current stance of e-modules for EFL/ESL learning?

The first research question is attempted to answer distribution of countries, distribution of year, composition of participant, research methods, theory and model used for developing e-modules, and distribution of themes.

Distribution of countries

The distribution of documents by country was shown in Figure 2a. The e-module related research was mostly conducted in Southeastern Asian countries, namely Indonesia (n=8), and Malaysia (n=3), with the rest of research conducted in China (n=3), and Thailand (n=1). Among the 15 articles retrieved are with 11 in Southeast Asia. This could ascribe to two reasons. For the first reason, the economic advantages of English as a lingua franca have been growing for developing nations. Eastern Asian countries illustrate this connection as English is closely linked to their thriving tourism industry (Rahman et al., 2022). The other reason is the affordance and prevalence of technologies in developing countries, as e-modules are closely related to advanced technologies (Wahyuni et al., 2023).

Distribution of year

As illustrated in Figure 2b, there is a noticeable uptick in surveys conducted since 2018. Reviewing a stable number of articles from 2020, it occurs during the Covid 19 pandemic and post pandemic. Analyzing the year distribution of articles allows us to infer that this is a contemporarily relevant

topic. Nine articles published were between 2020 to January 2023, a period marked by a significant educational crisis due to the Covid-19 pandemic. During that time, the teaching and learning EFL/ESL language underwent a thorough transition from conventional lecturing to online learning which proves beneficial in many aspects. As a result, technology-mediated learning is widely acknowledged as advantageous for education and has emerged as a prevailing trend in the realm of EFL/ESL learning.
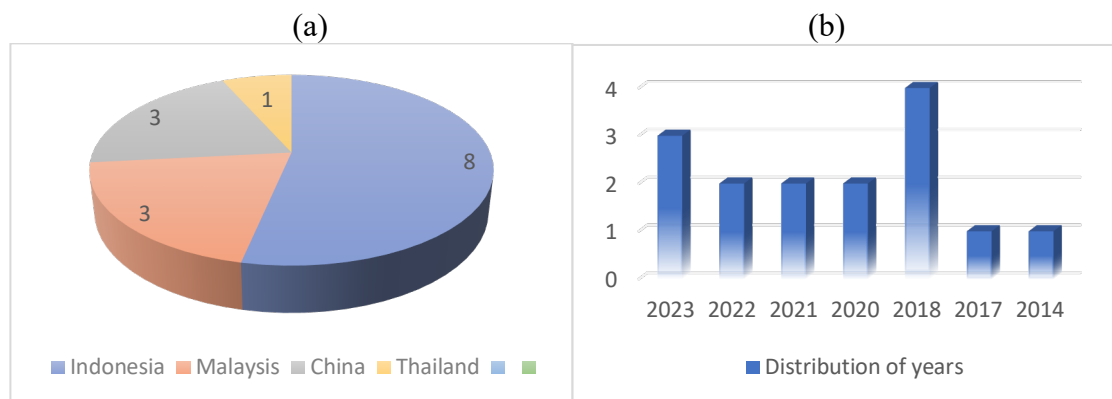
(a)   (b)

Figure 2a. Territorial distribution of surveys   *b.* Temporal distribution of surveys

Composition of participants

As illustrated in Figure 2c, most documents choose undergraduate students (n=9) as their sample, followed by postgraduate student (n=1), higher vocational students (n=1), adults (n=1), high school students (n=1), and unclear mentioned (n=1). Besides, there is 1 article with the mixed participants (i.e. higher vocational students and employees). This suggests that participants in past research have mostly been undergraduate students, probably because these samples are easy to conduct experiments for online learning (Zhong & Abdullah, 2023). Most importantly, they have preference for technology-mediated learning and relatively high learner autonomy than primary or secondary students. However, it is noteworthy that there is a growing focus on higher vocational students in EFL/ESL learning (Rahman et al., 2022; Dewi et al., 2018). The finding provides researchers with insight, suggesting a necessity to enhance EFL/ESL learning for vocational students. Notably, there has been a remarkable increase in the enrollment of higher vocational students, particularly in China, in recent years.
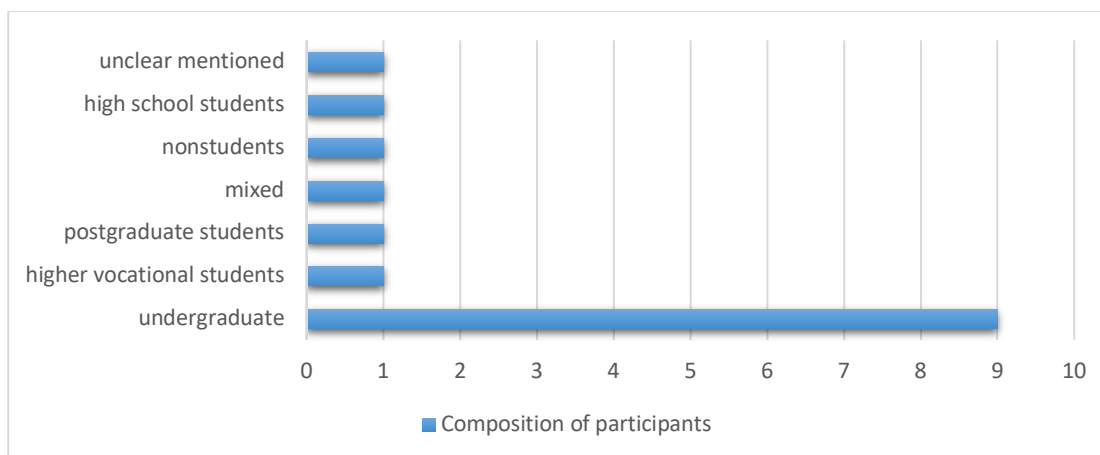
Figure 2c.   Composition of participants

Research methods

Figure 2d revealed that the mixed method (n=6) and the quantitative method (n=6) were the mostly used approach in these articles. These documents used surveys accounted for 11 out of the 15 articles reviewed. Then followed the qualitative method (n=3). Among the research instruments used in the studies reviewed, questionnaires (n=11) are prominently favored, followed by interviews (n=6), tests (b=4), case study (n=1). That is probably because questionnaires are cost-effective, and easy to conduct.
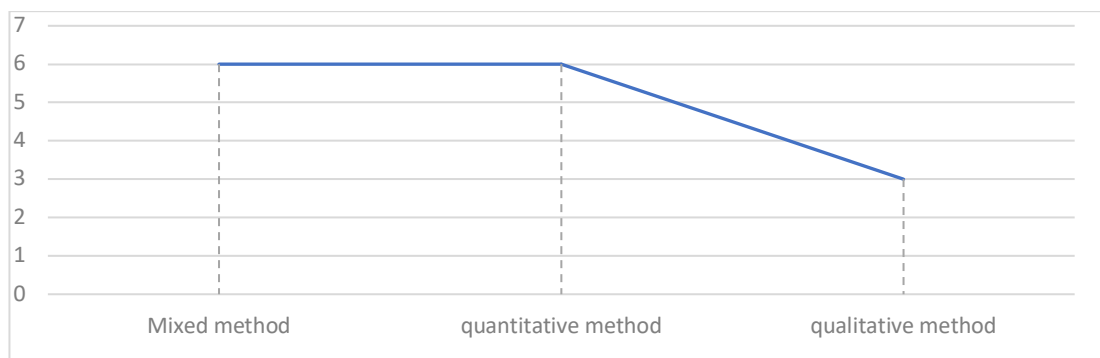

Figure 2d.   Research methods

Models used to development of e-modules

Of all studies examined in this review, only 6 mentioned the models used to design and develop e-modules. Among them, ADDIE Model accounts for three documents, Fuzzy Delphi Method, Four-D Model, and ASSURE Model account for one document respectively. So far, the ADDIE model has been widely used for e-learning, distance learning, and mobile learning of English language (Almelhi, 2021; Karademir et al., 2021). In this review, Fuzzy Delphi Method was employed in module design to address uncertainties and vagueness in decision-making. During the course design, this method accommodates diverse opinions and uncertainties, seeking the panel experts most preferred case criteria, curriculum aspects, and media design (Nazeera, 2017). In comparison,

the Four-D Model (Define, Design, Develop and Disseminate) is remarkably like ADDIE Model (Analysis, Design, Development, Implementation, Evaluation), yet the biggest difference lies in the absence of an evaluation stage in the Four-D Model (Thiagarajan et al., 1974). Regarding ASSURE Model, its acronym outlines the following steps: analyze learners; state objectives; select, modify, or design materials; utilize technology, media, and materials; require learner engagement, and evaluate and refine (Hakim et al., 2020). Overall, the ADDIE Model and ASSURE Model are comprehensive frameworks with different emphases, the Four-D Model lacks a dedicated evaluation stage, and the Fuzzy Delphi Method addresses uncertainties in decision-making.
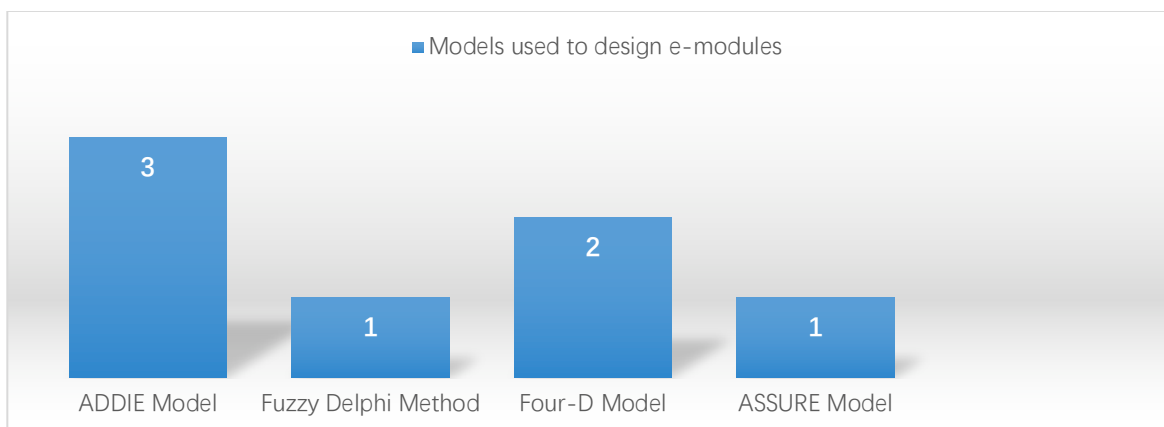

Figure 2d. Distribution of theory/ models used for e-modules

Distribution of themes

The review identified 9 main themes of the 15 documents reviewed, and some of the articles contained more than one theme (see Table 4). The following results indicate the present stance of research on e-modules in the domain of EFL/ESL education. Specifically, the most addressed theme among the chosen articles is language skills (n=7), among them, speaking (Plengkham & Wasanasomsithi, 2023; Rahman et al., 2022; Suryani et al., 2021; Lu, 2021) received comparatively higher attention than other skills like writing (Rahman et al., 2022), listening (Miao & Mao, 2018), reading (Rahman et al., 2022), vocabulary (Kusumawati et al., 2018), and grammar (Anggrawan & Satria, 2020) received comparatively less attention. Then followed by learner autonomy or independent learning (Rahman et al., 2022; Arif et al., 2014; Fahrughazi et al., 2023; Brega & Kruglyakova, 2022; Miao & Mao, 2018; Hakim et al., 2020), and English for Specific Purpose (Rahman et al., 2022; Nazeera, 2017; Tatzl, 2018; Kusumawati et al., 2018; Wahyuni et al., 2023; Dewi et al., 2018) in this review. Furthermore, two themes account for 3 respectively, namely assessment of e-modules (Plengkham & Wasanasomsithi, 2023; Anggrawan & Satria, 2020; Fahrughazi et al., 2023), and perceptions of e-modules for English learning (Rahman et al., 2022; Suryani et al., 2021; Fahrughazi et al., 2023). Ultimately, the least discussed themes include advantages and disadvantages (Fahrughazi et al., 2023; Brega & Kruglyakova, 2022), challenges (Arif et al., 2014), and education for sustainable development (Dewi et al., 2018).

Table 4. List of the themes used in the reviewed articles

Aspect(s)	f	Sample articles
Learner autonomy	5	Rahman et al., 2022 Arif et al., 2014 Fahrughazi et al., 2023 Miao & Mao, 2018 M. Arif Rahman Hakim et al., 2020
English for specific purpose (ESP)	6	Rahman et al., 2022 Nazeera, 2017 (pdh thesis) Dietmar Tatzl, 2018 Kusumawati et al., 2018 Wahyuni et al., 2023 Dewi et al., 2019
Development of language skills	7	Plengkham, B. & Wasanasomsithi, P. (2023) Rahman et al., 2022 Suryani et al., 2021 Lu Zhihui, 2021 Miao & Mao, 2018 Kusumawati et al., 2018 Anggrawan & Satria, 2020
Perceptions for e-modules	3	Rahman et al., 2022 Suryani et al., 2021 Fahrughazi et al., 2023
Assessment of e-modules	3	Plengkham, B. & Wasanasomsithi, P. (2023) Anggrawan & Satria, 2020 Fahrughazi et al., 2023
Advantages & disadvantages	1	Fahrughazi et al., 2023
Challenges	1	Arif et al., 2014
Cross-culture	1	M. Arif Rahman Hakim et al., 2020
Education for Sustainable Development	1	Dewi et al., 2018

Note: Some of the articles contained more than one theme.

RQ 2. What are the gaps of e-modules for EFL/ESL learning?

The primary objective of conducting a Systematic Literature Review (SLR) is to find the gaps in the current literature. To address the second question, the researchers compare literature between 2000 and February 2024, and analyze aspects that have not been addressed by previous researchers.

Geographical distribution of research

Most e-module-related research was concentrated in Southeastern Asian countries, primarily Indonesia and Malaysia. Limited studies from other regions suggest a gap in understanding the impact and implementation of e-modules in diverse cultural and economic contexts.

Participant composition

The prevalence of undergraduate students as participants in the research reviewed may be attributed to their accessibility, but it does not imply that undergraduates are the most crucial group for English learning. The findings highlight an increasing interest in higher vocational students in the studies under review (Dewi et al., 2018; Rahman et al., 2022), indicating a necessity for more targeted research to cater to diverse profiles of EFL/ESL learners and their unique needs. It is noteworthy that higher vocational students worldwide have been increasingly grown in recent years. Take China for example, according to official statistics released in 2019, vocational colleges taking 52.94% of the total of higher education institutions, hosting nearly 13 million students, accounting for 42.25% of the total tertiary student population (Juan & Nair, 2022). Consequently, there emerges a potential necessity for English language learning within this demographic in the realm of EFL/ESL education.

Research methods

Mixed methods and quantitative approaches are prevalent in the reviewed studies, while qualitative methods are less common. In the studies reviewed, questionnaires (n=11) are prominently favored, followed by interviews (n=6), and tests (b=4). Although questionnaires offer efficiency, it is acknowledged that they may not capture the depth and richness of qualitative data, as seen in methods like case studies. Consequently, future research on e-modules used for EFL/ESL learning should consider a balanced integration of both quantitative and qualitative methods to ensure a comprehensive exploration of the research on e-modules, such as interviews, case study, ethnography, narrative research, phenomenology, etc.

Models used for E-module development

The research gap identified in the study is a limited exploration of models used in the development of e-modules. Among the 15 articles reviewed, only six studies mentioned specific models for designing and developing e-modules. The predominant model is the ADDIE Model, widely utilized in e-learning, distance learning, and mobile learning for English language instruction. The Fuzzy Delphi Method, employed in one study, addresses uncertainties and vagueness in decision-making during module design, accommodating diverse opinions and uncertainties. The Four-D Model, similar to ADDIE but lacking a dedicated evaluation stage, is mentioned in one document. The ASSURE Model, with its outlined steps for learner analysis, objective setting, material design, technology utilization, learner engagement, and evaluation, is also mentioned once. Overall, the limited utilization and discussion of different models, along with variations in their emphases and stages, indicate a research gap in understanding the effectiveness and applicability of various instructional design frameworks in the context of e-module development. Further exploration and comparison of these models could contribute to enhancing the design and implementation of e-modules for language learning.

Distribution of themes

In the examination of themes within the review, it is evident that while language skills are extensively covered, there exists an imbalance in their distribution, with a predominant focus on speaking (n=4), followed by reading (n=1), listening (n=1), and writing (n=1). Notably, productive

skills, particularly writing, have not received significant attention. This gap is further underscored by the absence of a dedicated writing curriculum tailored for non-English major students (Wang & Chen, 2021; Chen & Gu, 2023), emphasizing the urgent need to develop a specialized e-module specifically designed to enhance English writing skills.

Among 15 studies reviewed, there are only three e-modules designed for English learning beyond the classroom (Rahman et al., 2022; Arif et al., 2014; Wahyuni et al., 2023). It is noteworthy that informal learning constitutes a substantial portion, estimated at around 70%, of individuals' overall learning endeavors (Rogers, 2014; Attwell 2007). Under digital age, there is a close association between informal learning and learner autonomy, a concept explored in six of the reviewed documents. Generally speaking, learner autonomy refers to an ability to take charge of one's learning beyond the classroom (Holec, 1979). Despite the growing recognition of learner autonomy, a notable research gap emerges when considering its intersection with e-modules for informal English learning. While e-modules have been widely employed in formal education settings, their impact on fostering learner autonomy in informal contexts have not been extensively explored. The limited research in this domain prompts a critical need for future studies to investigate the design, development, effectiveness and challenges, and learner experiences of e-modules used for informal learning of English.

Conclusion and Recommendation for future research

The study's implication regarding the gaps of e-modules for EFL/ESL learning is multi-faceted. Firstly, most research on e-modules is concentrated in Southeastern Asian countries, particularly Indonesia and Malaysia. This concentration suggests a lack of understanding of the impact of e-modules in other cultural and economic contexts. Additionally, while undergraduate students are predominantly studied, there is a rising interest in higher vocational students. In terms of research methods, the dominance of mixed methods and quantitative approaches in the reviewed studies suggests a need for a balanced integration of qualitative methods to ensure a comprehensive exploration of e-modules' effectiveness in EFL/ESL learning. Moreover, the distribution of themes predominantly focuses on speaking skills, overlooking writing skills, indicating a need for specialized modules in this area. Finally, there is limited research exploring the intersection of e-modules with informal English learning, urging future research to delve into its design, development, and effectiveness to address this deficiency.

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