การพัฒนาเครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์ สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศ ระดับชั้นมัธยมศึกษา

THE DEVELOPMENT OF AN E-LEARNING EVALUATION TOOL FOR HIGH SCHOOL EFL CURRICULUM

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วิทยานิพนธ์	การพัฒนาเครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศ ระดับชั้นมัธยมศึกษา The Development of an E-Learning Evaluation Tool for High School EFL Curriculum
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บทคัดย่อ

การศึกษานี้มีวัตถุประสงค์เพื่อ (1) พัฒนากระบวนการในการสร้างเครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศระดับมัธยมศึกษา (2) ระบุหัวข้อและส่วนประกอบหลักของเครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์และ (3) สอบถามความคิดเห็นของครูผู้สอนภาษาอังกฤษในฐานะภาษาต่างประเทศ (EFL) เกี่ยวกับประสิทธิภาพของเครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์ การวิจัยได้ดำเนินการตามกระบวนการพัฒนา 4 ขั้นตอนดังนี้ (1) การให้เหตุผลเบื้องต้น (2) การพัฒนา (3) การดำเนินการ และ (4) การประเมินผล โดยผ่านกระบวนการตรวจสอบความถูกต้อง การทดลอง และการทดสอบ เครื่องมือที่พัฒนาขึ้นในงานวิจัยนี้ประกอบไปด้วย เครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์ฯ และแบบสอบถามความคิดเห็นเกี่ยวกับการใช้เครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์ โดยหัวข้อการประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์ คือ (1) โครงสร้าง รูปแบบ และการออกแบบ (2) คุณภาพเนื้อหาหลักสูตร (3) ฟังก์ชันการทำงานและระบบ และ (4) บริการสนับสนุนสำหรับการใช้งานสื่ออิเล็กทรอนิกส์ ผลการวิจัยพบว่า เครื่องมือประเมินสื่ออิเล็กทรอนิกส์ฯ มีความถูกต้องของเนื้อหาและค่าความเชื่อมั่นสูง เท่ากับ 0.94 โดยครูผู้สอนภาษาอังกฤษในฐานะภาษาต่างประเทศ (EFL) จำนวน 122 คน จากโรงเรียนขนาดใหญ่พิเศษ 7 แห่ง สังกัดสำนักงานเขตพื้นที่การศึกษามัธยมศึกษาปทุมธานี พบว่าความคิดเห็นของครูมีทิศทางในเชิงบวก โดยมีคะแนนเฉลี่ยรวม 4.46 (SD = 0.12) ซึ่งแสดงให้เห็นถึงการยอมรับหลังจากใช้เครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์ฯ เครื่องมือมีประโยชน์สำหรับครูผู้สอนภาษาอังกฤษในฐานะภาษาต่างประเทศ (EFL) ระดับมัธยมศึกษาของประเทศไทย

Thesis Title	The Development of an E-Learning Evaluation Tool for High School EFL Curriculum
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ABSTRACT

This study aimed to: (1) develop a process for constructing an e-learning evaluation tool for Thailand's high school EFL curriculum mandated by OBEC, (2) identify key dimensions and components of the evaluation tool, and (3) assess high school EFL teachers' opinions on its effectiveness. The research followed a four-phase development process: (1) Rationale, (2) Development, (3) Implementation, and (4) Evaluation. Through rigorous validation, trials, and pilot testing, two research instruments were developed: an e-learning evaluation tool and an opinion questionnaire. The e-learning evaluation tool comprises four key dimensions: (1) structure, layout, and design, (2) quality of course content, (3) functionality and system, and (4) support services for e-learning implementation in the high school EFL curriculum. The tool demonstrated high content validity and reliability (0.94). A total of 122 EFL teachers from seven extra-large secondary schools under the Secondary Education Service Area Office Pathumthani used the evaluation tool to assess e-learning programs and provided feedback through a questionnaire. The teachers' opinions were overwhelmingly positive, with an overall mean score of 4.46 (SD = 0.12), indicating strong acceptance. These findings suggest that the e-learning evaluation tool is a valuable resource for EFL teachers in selecting e-learning programs aligned with Thailand's high school EFL curriculum.

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Nattapawee Wongkrut

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CHAPTER 1
INTRODUCTION

This chapter presents the background of the study focusing on the evolution of e-learning, the elements of e-learning, the advantages and disadvantages of e-learning, and e-learning evaluation. In addition, it delineates the statement of the research problem, the objectives of the study, the research questions, the scope, the limitations, and the significance of the study, as well as the definitions of key terms.

1.1 Background of the study

Development from Early CALL to E-Learning

The evolution of technologies that support language learning started with the development of Computer-Assisted Language Learning (CALL) and has continually advanced to e-learning. In addition, the advancements in computing, the Internet, and pedagogical theories related to educational technologies have significantly contributed to language learning and teaching. The progression can be traced back to the early stages of Computer-Assisted Language Learning (CALL) in the 1960s-1970s (Marty, 1981). The 1960s saw the initiation and innovation of CALL, leveraging mainframe computers to offer language drills and practice exercises. In the 1970s and 1980s, personal computers were employed to create interactive and user-friendly CALL software that incorporated texts, images, graphics, and simple multimedia. The pedagogical focus of early CALL programs was largely based on the behaviorist approach that focused on repetitive drilling for language practice. Then, the communicative CALL became popular and was widely used since the programs focused on real-world contexts, authentic language use, and meaningful interaction (Prastikawati, 2019).

In the 1980s, the multimedia CALL, which integrated multimedia and the Internet, was introduced (Conole, 2017). Then, the learning experience of students could be meaningfully enriched with the integration of audio files, videos, and graphics—making language learning more engaging and effective. Later, the advent of web technologies fostered the development of interactive websites and online courses, offering offline

and real-time interaction and feedback. In the 1993s, the Internet dramatically revolutionized CALL allowing access to abundant learning resources, facilitating communication among students and teachers, and supporting networked learning. Subsequently, language learning technologies have advanced, with the development of Learning Management Systems (LMS) consisting of tools and functions for language pedagogies, e. g. exercises, quizzes, and forums, providing holistic learning environments to support efficient teaching and learning.

Furthermore, mobile learning technologies have proliferated thanks to modern smartphones and tablets that support language learning apps and other resources. The present era has embraced Artificial Intelligence (AI), powered tools, for example, chatbots and language processing software to foster and enhance personalized learning experiences (AI- Fraihat, et al.,2020). The e-learning Ecosystem has been introduced integrating comprehensive e-learning platforms that provide not only language learning technologies but also a full spectrum of features and functions that support educational attainments. Synchronous and Asynchronous Learning e-learning activities can support both real-time and self-paced learning modalities, catering to students' diverse learning needs, preferences, and schedules. (El-Seoud, 2014).

The latest trends in e-learning have embraced new technologies, for example, virtual worlds, and artificial intelligence to motivate and actively engage learners in the learning process. Virtual and Augmented Reality can provide immersive and rich language learning experiences. In essence, the evolution of technologies for language learning from CALL to e-learning has transformed simple computer-based drills, activities, and tasks into highly sophisticated, interactive, meaningful, and flexible online learning environments. This development could reflect trends in educational technology for language education, emphasizing accessibility, authenticity, engagement, flexibility, and personalization (Macpherson, 2005). The following section discusses the elements of e-learning.

Advantages and Disadvantages of E-Learning

E-learning offers many advantages, including increased accessibility, flexibility, and cost-effectiveness. It leverages multimedia and adaptive technologies to enhance learning and provides a wide range of courses that cater to diverse needs. However, it also presents challenges such as limited social interaction, technological barriers, and

the need for strong self-motivation (Meloni, 1998). Ensuring the quality and integrity of e-learning experiences remains an ongoing concern. Balancing these strengths and weaknesses is crucial for maximizing the benefits of e-learning while mitigating its drawbacks.

E-Learning provides several benefits. Firstly, it can be accessed via the Internet, making educational services available to a wider audience. Given flexible scheduling, learners can access course instructional materials and complete assignments at their own learning pace (Nedeva & Dimova, 2010). Secondly, e-learning can reduce costs, and institutions can support the enrollment of a large number of students. Thirdly, e-learning provides diverse learning resources, including interactive and capturing multimedia integration for a variety of courses. The use of videos, interactive simulations, and other multimedia resources can enhance understanding and retention of information (Wu et al., 2012). Fourthly, e-learning supports personalized learning in various learning environments (Irwin, D., 2012). Technologies like AI can tailor learning experiences to individual needs, providing customized feedback and adjusting content difficulty. Students can control the speed of their learning, spending more time on challenging topics and less on familiar ones (Huang & Chiu, 2015). Finally, e-learning encourages active engagement and interaction (Meloni, 1998). Quizzes, forums, and interactive simulations can keep learners engaged and facilitate active learning. Moreover, online platforms often include tools for collaboration, such as discussion boards, group projects, and peer reviews.

Nonetheless, e-learning can pose some challenges. Not all learners have reliable access to the necessary technology or internet connectivity, creating a digital divide. Problems like software glitches, platform downtimes, and compatibility issues can disrupt learning. The quality of e-learning courses can vary significantly, with some lacking in-depth content, engagement, or effective instructional design (Dudeney & Hockly, 2007). Moreover, e-learning requires a high level of self-discipline and motivation, which some learners might struggle with. The flexibility of e-learning can sometimes lead to procrastination and difficulty in maintaining a consistent study schedule (Sarrab, Al-Shihi & Rehman,2013). Finally, certain subjects, particularly those requiring hands-on practice (e.g., lab work, clinical practice), are difficult to effectively replicate online. Some skills and knowledge are best acquired through real-world

experiences that are hard to simulate in a virtual environment. Therefore, e-learning needs to be evaluated to ensure the quality and suitability of a particular group of learners.

E-learning and Its Elements

According to Khlaisang and Koraneekit (2009), e-learning has four main components. Firstly, e-learning content created by teachers or specialists in a specific field is the most precious element in an e-learning course. Secondly, a learning management system (LMS) with tools, including communication tools, productivity tools, student involvement tools, administration tools, course delivery tools, and curriculum design, is used to support instruction and learning. Thirdly, interactivity tools are tools used to communicate between teachers and students. The tools can be divided into two types: synchronous, such as chat, video conference, or audio conference, and asynchronous, such as blogs, and e-mail. Lastly, e-learning assessments are employed to measure learner performance before and after classes.

Brown and Voltz (2005) presented six elements at the heart of effective e-learning design: activities, scenarios, feedback, delivery, context, and influence. Rich learning activities create opportunities for meaningful learning experiences rather than guiding students along an inflexible and predetermined learning route. Meaningful learning activities often encourage the active participation of learners in choosing the experiences they want to try on (Muirhead & Haughey, 2003). Therefore, learning activities should be exciting and complex enough to engage and challenge students to invest time and effort in learning. This highlights the view that active involvement in tasks often results in fruitful learning outcomes (Biggs, 1991). In addition, scenarios designed for rich learning outcomes can provide realistic, meaningful, and relatable contexts in which learners can utilize their knowledge and skills. By creating activities and integrating authentic scenarios, e-learning designs can bolster relevance and invite learners to think creatively and critically, allowing learners to experience the real-world implications of their studies. Effective feedback can transform e-learning designs from static content delivery systems into dynamic, interactive learning experiences. Feedback can help establish two-way communication between the learner and the e-learning content, supporting self-assessment and meaningful reflection. Moreover, effective delivery methods should be designed to effectively captivate learners,

encourage active participation, and maintain their attention. A well-designed context in the e-learning environment can help learners comprehend the importance and goals of their learning, fostering a deeper understanding of the instructional material and a greater sense of accomplishment.

Alias et al. (2011) studied the important elements of e-learning success and emphasized the need to develop appropriate models for e-learning. The research presented 10 elements essential for ensuring the success of e-learning: ease of use, appearance, linkage, structure and layout, information, reliability, efficiency, support, communication, and security.

In summary, the elements of e-learning can be classified into four dimensions: 1) **structure, layout, and design**; 2) **quality of course content**; 3) **functionality** and 4) **system, and support quality**. They have been integrated into e-learning evaluations.

E-Learning Evaluations

E-learning evaluation is crucial for understanding the effectiveness and impact of digital learning programs. The primary goals are to determine educational objective attainments and enhanced learner experiences. Moreover, e-learning evaluation also involves knowledge acquisition, learner satisfaction, behavioral changes, and overall outcomes to ensure alignment with educational goals. The evaluations of e-learning programs intended for English learning often focus on improvement in English proficiency, aspects of language learning, and the typical needs of learners who study English as a foreign language (EFL). The e-learning evaluation schemes generally intend to ensure that learners acquire the necessary English skills effectively and that instructional methods and technologies utilized are optimal.

Previous research has developed e-learning evaluation frameworks for education. For instance, Ozkan and Koseler (2009) developed the multidimensional evaluation of e-learning systems in a higher educational context. The factors included in the survey instrument were instructor quality, information content quality, system quality, service quality, learner's attitude, and supportive issues. Moreover, Liu and Hwang (2011) proposed the multidimensional evaluation criteria for English e-learning which included learning materials, functionality, structure, and information.

Research has also examined the effectiveness and engagement of e-learning in Thailand. For example, Chulerk (2023) developed an English e-learning program to enhance students' writing skills and studied its effectiveness. An evaluation tool was used to assess the e-learning program focusing on content quality, language use, design, system functionality, and multimedia elements. The results showed that the e-learning program had a significant impact in improving students' English writing skills after its implementation. Additionally, Worasuwanarak and Limtasiri (2021) developed an e-learning program emphasizing learning objectives, content, activities, and exercises to enhance students' writing skills. Phraesrisakul (2023) studied an e-learning program aimed at promoting English reading comprehension skills. The findings indicated that the e-learning program effectively enhanced reading comprehension skills.

Similarly, Worapongphat et al. (2022) developed an e-learning program to improve students' English reading skills and examined its effectiveness. The study found that students' learning outcomes improved after using the e-learning program. Additionally, the e-learning program effectively addressed the challenges students faced with English reading. Woottipong (2016) developed e-learning focusing on English pronunciation, reading, and writing skills, and also evaluated the effectiveness of the e-learning program. The findings revealed that the e-learning program was highly effective and could be used to improve students' pronunciation, reading, and writing skills. From previous research, it is evident that e-learning evaluation tools are crucial for determining whether e-learning is effective and suitable for the curriculum and learners.

In addition, Kansoongnern and Ruangrit (2016) assessed English e-learning focusing on content assessment, activity design, screen design, and technical design. Additionally, Al-Fraihat, et al. (2020) developed a conceptual model for e-learning evaluation intended for UK universities. The model consists of technical system quality, information quality, service quality, educational system quality, support system quality, learner quality, instructor quality, perceived satisfaction, perceived usefulness, and system use.

In conclusion, research on e-learning evaluations from overseas and in Thailand has focused on understanding the effectiveness, engagement, technological

infrastructure, and cultural appropriateness of e-learning programs. The frameworks, evaluation metrics, methods, challenges, and future directions identified in the literature and research are summarized and discussed in detail in the literature review chapter of this thesis. However, the previous e-learning evaluation tools were designed to assess specific aspects of e-learning and comprehensive e-learning evaluation tools that cover multiple dimensions and align with the core curriculum of high school EFL mandated by Thailand's Ministry of Education are still lacking.

1.2 Statements of the Problem

E-learning has been adopted as a crucial component of English as a Foreign Language (EFL) education in many high schools nationwide under Thailand's Office of Basic Education Commission (OBEC). E-learning integration intends to enhance traditional learning and teaching methods in the classroom by offering diverse functionalities and resources, such as text-based instructional materials, video instruction, quizzes, exams, and virtual reality environments. These e-learning resources and tools have the potential to significantly bolster and enrich students' learning EFL experiences by catering to different learning styles and enabling a more interactive and engaging approach to language acquisition.

Despite its increasing adoption and potential benefits, a significant challenge persists since there is no standardized, comprehensive evaluation tool specifically developed for assessing e-learning achievements in EFL contexts within OBEC high schools in the country. This gap presents the following critical problems:

Lack of Uniform E-learning Assessment Criteria for High School EFL Curriculum

Lacking a standardized evaluation framework and tool, teachers and administrators cannot assess the effectiveness of e-learning software program efficiency regularly, including content quality, curriculum alignment, and overall system design.

Impact of E-learning on EFL Teaching and Learning Quality

EFL teachers lack reliable assessment outcomes to gauge whether purchased e-learning software programs effectively support curriculum goals, and students' learning outcomes and engagement.

Missed Opportunities for E-learning Program Improvement

Without a comprehensive evaluation mechanism and evaluation results that inform about the strengths and weaknesses of the e-learning programs, developers of e-learning tools encounter difficulties in making improvements. This drawback could hinder the refinement and development of the e-learning platforms.

Lack of Reports on Resource Allocation for E-learning Implementation

Without adequate e-learning evaluation outcomes, school administrators will not know if their investments in time, effort, and financial budgets are viable.

1.3 Research Objectives

The purposes of the study are as follows:

1. To develop a comprehensive e-learning evaluation tool for the high school EFL curriculum as mandated by the Office of the Basic Education Commission (OBEC) under the Ministry of Education in Thailand.

2. To investigate the opinions of high school EFL teachers regarding the e-learning evaluation tool for the high school EFL curriculum.

1.4 Research Questions

1. What is the process to develop the e-learning evaluation tool?

2. What dimensions and components should be included in the comprehensive e-learning evaluation tool for the high school EFL curriculum mandated by OBEC in Thailand?

3. What are the opinions of high school EFL teachers about the e-learning evaluation tool for the high school EFL curriculum?

1.5 Research Framework for Developing an E-Learning Evaluation Tool

The present research has established an e-learning evaluation tool for the high school EFL curriculum mandated by OBEC in Thailand. The research follows a systematic process divided into four phases. In Phase 1 (Rationale), the objectives are outlined to develop a reliable and user-friendly e-learning evaluation tool, supported by a review of the literature and an analysis of existing models to identify strengths, weaknesses, and gaps. Expert focus group interviews were conducted to establish key evaluation criteria. Phase 2 (Development) involved designing the research method, creating and prototyping the evaluation tool, and validating it through expert reviews and pilot testing to assess content validity and reliability. Feedback from testing was used to refine the tool. Phase 3 (Implementation) included deploying the tool in real-world educational settings, collecting data on its performance, usability, and effectiveness, and analyzing both quantitative and qualitative data. Finally, Phase 4 (Evaluation) assessed the tool's effectiveness, summarized findings, and refined the tool further based on the results. This iterative process ensures the development of a comprehensive, effective, and stakeholder-focused evaluation tool.

1.6 Scope of the study

The scope of this study was to develop an e-learning evaluation tool for the high school EFL curriculum as determined by the Office of the Basic Education Commission (OBEC) under the Ministry of Education in Thailand. According to Khlaisang (2012), the four key elements of e-learning include electronic content, a learning management system (LMS), communication tools, and assessment. Therefore, the e-learning evaluation tool was intended for e-learning programs, OpenCourseWare, virtual classrooms, and websites that have the four elements. The e-learning evaluation tool was not aimed at evaluating other electronic devices that may have merely YouTube channels, Social Media, Mobile Apps, Virtual Reality (VR), Augmented Reality (AR), and video lessons that lack the aforementioned key e-learning elements.

The current research intended to develop an e-learning evaluation tool that included the following dimensions: 1) Structure, layout, and design, 2) quality of course contents, 3) functionality and system, and 4) support quality. However, the study did not intend to examine learner engagement, satisfaction, behavioral changes, learning outcomes, performance, retention, and completion rates.

The validation method of this e-learning evaluation tool was based only on five Thai experts and the opinions of 122 high school EFL teachers working in the Secondary Education Service Area Office Pathumthani, a province in a suburban area of Thailand. These teachers were Thais and have been using e-learning programs for at least 1 year to teach English to high school students. This study did not include foreign teachers, school administrators, students, and other groups of stakeholders.

1.7 Limitations

The research scope has several limitations that may affect the comprehensiveness, applicability, and generalizability of the findings. The e-learning evaluation dimensions focused on structure, layout and design, quality of course contents, functionality and system, and support quality dimensions. Therefore, the evaluation tool may not fully address e-learning content quality and alignment with EFL educational standards in broader contexts. The study's evaluation dimensions omitted factors, such as learner engagement, satisfaction, behavioral changes, learning outcomes, performance, retention, and completion rates, which could raise questions regarding the incompleteness of the evaluation tool.

The validation, based on input from only four Thai experts, may lack robustness and high reliability; thus, a more diverse group may be needed for comprehensive validation. Additionally, relying on EFL high school teachers from Pathumthani limits geographic diversity and introduces bias, as teachers' experiences from other regions might differ. Furthermore, focusing solely on Pathumthani may not reflect the realities of urban or rural e-learning contexts, restricting the findings' applicability within Thailand. Excluding foreign teachers, school administrators, students, and other stakeholders may have overlooked crucial perspectives. The sample of 122 EFL teachers may not capture the full variability of experiences and opinions. The

evaluation may need to increase sample diversity and size and include a wider range of stakeholder perspectives.

1.8 Significance of Study

Developing a comprehensive e-learning evaluation tool for the high school EFL curriculum is crucial for several reasons. This tool will help standardize the evaluation of e-learning programs, ensuring they meet the educational standards set by OBEC. It will enable consistent quality assurance across different schools. The tool will ensure that e-learning programs align with the goals and standards of the Basic Education Core Curriculum B.E. 2551 (A.D. 2008), fostering virtues, wisdom, and global competitiveness among students.

Teachers, as primary users of the e-learning evaluation tools, offer valuable insights into their practical effectiveness and usability. Their feedback is crucial for refining and enhancing the evaluation tool. Understanding teachers' opinions and perspectives ensures that the evaluation tool is practical and relevant to the real-world teaching environment. It will help in creating a tool that addresses actual challenges and needs faced by teachers. Involving teachers in the evaluation process fosters a sense of ownership and acceptance, increasing the likelihood of successful implementation and widespread adoption of the evaluation tool. Teachers' feedback can highlight areas where they might need additional training or support in using the e-learning tools effectively, leading to targeted professional development initiatives. Teachers' opinions can inform policy decisions and curriculum development, ensuring that educational strategies are grounded in classroom realities and teacher experiences.

School administrators and policymakers will have a reliable instrument to assess the effectiveness of e-learning tools, aiding in informed decision-making regarding resource allocation, curriculum development, and instructional methods. By systematically evaluating the e-learning tools, educators can identify effective practices and areas needing improvement, leading to better educational outcomes for students. Regular evaluations using this tool will provide feedback for continuous improvement, helping to keep e-learning programs relevant and effective in an ever-evolving educational landscape.

Additionally, developing an e- learning evaluation tool allows developers to receive evaluation results on the effectiveness of the e- learning program, which can be used to improve the program's efficiency in terms of content, system usability, layout and design, user support, and suitability for learners.

Overall, the developed e-learning evaluation tool could enhance the quality and effectiveness of e-learning in Thailand's high school EFL curriculum, ensuring alignment with national educational goals while incorporating practical feedback from educators.

1.9 Definition of Terms

1.9.1 Computer-Assisted Language Learning (CALL)

Computer-Assisted Language Learning (CALL) refers to the use of computers and technology to assist in language teaching and learning. CALL encompasses a wide range of applications and methodologies, including software programs, multimedia resources, online courses, and interactive language exercises designed to enhance language acquisition and proficiency (Nachoua, 2012; Prastikawati, 2019; Hani, 2014).

1.9.2 E-learning

E-learning, short for electronic learning, refers to the use of electronic technologies to access educational curricula outside of a traditional classroom. It involves the delivery of educational content and instruction through digital platforms, which can include the Internet (Brown & Voltz, 2005). E-learning can encompass a wide range of activities from online courses, and virtual classrooms to the use of multimedia resources like interactive software (El-Seoud, 2014). In this research, e-learning specifically refers to the digital platforms for learning English for the high school EFL curriculum as determined by the Office of the Basic Education Commission (OBEC) under the Ministry of Education in Thailand.

1.9.3 E-learning Evaluation Tool

An e-learning evaluation tool is a systematic instrument designed to assess the effectiveness of e-learning. The e-learning evaluation tool developed in this research focused on four dimensions consisting of 1) structure, format, and design, 2) content, 3) usage and system, and 4) user service. The primary aim of the e-learning evaluation

tool is to provide insights that can inform improvements, ensure alignment with educational goals, and enhance the overall e-learning experience (Liu & Hwang, 2011; Ozkan, 2009).

1.9.4 E-learning Program

E-learning programs refer to computer applications or platforms specifically designed for delivering English educational content and facilitating learning through electronic means (Macpherson, 2005; Beamish et al., 2002; Spender, 2001). These programs typically include features for presenting engaging structure, layout, and design, delivering content interactively, managing a stable system, and providing tools to support learning. They are essential tools in online education, supporting various instructional methods and learning styles.

1.9.5 English as a Foreign Language (EFL)

English as a Foreign Language (EFL) refers to the teaching and learning of English in countries where English is not the primary language and is learned as a subject or skill for academic or professional purposes. Unlike ESL, where English is learned in a context where it is a dominant or official language, EFL is typically taught in environments where English is not widely spoken outside of the classroom (Promdee & Pongsawat, 2020).

1.9.6 English as a Second Language (ESL)

English as a Second Language (ESL) refers to the teaching and learning of English intended for non-native speakers of English in countries where English is used as an official language alongside their native language. The focus is on developing language proficiency for communication in everyday situations, academic settings, or professional contexts (Zamel, 1976).

1.9.7 High School EFL Curriculum

The high school EFL curriculum refers to the management of teaching and learning English at the upper secondary level, based on Thailand's Basic Education Core Curriculum B.E. 2551 (A.D. 2008). It defines the goals, content, learning standards, and assessment guidelines for educational programs in Thai schools and provides a framework and directions for enhancing the quality of students' lives. The Basic

Education Core Curriculum prescribes four main standards for high school EFL curriculum as follows: Language for Communication, Language and Culture, Language and Relationship with Other Learning Areas, and Language and Relationship with Community and the World (Ministry of Education, 2001).

1.9.8 Opinions

Opinions refer to the subjective perspectives, feedback, and insights of high school EFL teachers regarding the utility, effectiveness, and usability of the tool designed to assess e-learning programs, websites, or software. These opinions encompass a range of views on how well the tool meets its intended purposes, its ease of use, comprehensiveness, accuracy, and overall impact on the e-learning environment.

1.10 Chapter Summary

This chapter traces the evolution of e-learning, starting from early Computer-Assisted Language Learning (CALL) to the current era of advanced technologies and multimedia. It describes the shift from behaviorist-based drills to enriched, interactive, web-based learning environments (Prastikawati, 2019; Marty, 1981). Key elements of an e-learning program, including electronic content, Learning Management Systems (LMS), interactivity, and assessment, are highlighted along with the advantages and disadvantages of e-learning. Benefits include increased accessibility and flexibility, while challenges include technological barriers and the need for self-discipline (Alias et al., 2011; Khlaisang & Koraneekit, 2009; Brown & Voltz, 2005; Muirhead & Haughey, 2003; Brodsky, 2003; Biggs, 1991).

The importance of e-learning evaluation is underscored, with goals centered on assessing educational objective attainment, enhancing learner experiences, and ensuring alignment with educational standards. Existing evaluation frameworks are critiqued for their inadequacy in addressing the specific needs of Thailand's high school EFL curriculum as mandated by the Office of the Basic Education Commission (OBEC) (Ministry of Education, 2001).

The primary research problem identified is the lack of a comprehensive e-learning evaluation tool tailored to high school English as a Foreign Language (EFL) contexts in

Thailand. The study aims to develop such a tool and gather feedback from high school EFL teachers regarding its efficacy.

The chapter outlines the research framework for creating an e-learning evaluation tool. It covers the study's background, detailing e-learning's evolution and components, and emphasizes the significance of evaluating e-learning to ensure program effectiveness and content quality. The chapter also critiques existing evaluation frameworks and discusses their limitations.

The research framework involves systematically developing, validating, and implementing a comprehensive e-learning evaluation tool. This approach includes four phases: rationale, development, implementation and evaluation, with criteria and metrics established for a user-friendly design and iterative refinement. Validation involves expert reviews, pilot testing, and reliability assessments. The implementation phase includes deploying the tool, collecting post-implementation data, and evaluating its effectiveness.

The chapter also discusses the study's scope and limitations, noting the exclusion of certain evaluation dimensions and stakeholders, which might affect the tool's comprehensiveness and generalizability. The significance of the study lies in its potential to standardize e-learning evaluations, improve educational outcomes, and inform policy decisions. The ultimate goal is to create a robust e-learning evaluation tool that meets Thailand's high school EFL curriculum needs and incorporates practical educator feedback.

The following chapter reviews related theories and research to develop the methodology and conceptual framework for the e-learning evaluation tool.

CHAPTER 2
LITERATURE REVIEW

This chapter reviews the related literature on the Basic Education Core Curriculum B.E. 2551 (A.D. 2008), the evolution of Computer-Assisted Language Learning (CALL), e-learning, factors influencing e-learning evaluation, dimensions and components of e-learning evaluation, and previous research e-learning evaluation. This review serves as a foundation for developing an e-learning evaluation framework and evaluation tool. Related research highlights the evolution of e-learning, its evaluation, and the various dimensions of e-learning assessment. Importantly, this leads to the creation of the e-learning evaluation framework in the current study based on the analysis of findings, with the goal of developing a comprehensive evaluation tool for e-learning.

2.1 The Basic Education Core Curriculum B.E. 2551 (A.D.2008)

The Basic Education Core Curriculum B.E. 2551 (A.D.2008) of the Ministry of Education in Thailand was announced, and it has served as the core curriculum for national education at the basic levels, including primary, secondary, and high school education. The national core curriculum has established the content, goals, learning standards, and assessment guidelines for educational programs in Thai schools and provided a framework and directions for enhancing the quality of students' lives (Ministry of Education, 2001). The curriculum aims to equip students with the necessary knowledge, skills, values, and attitudes to thrive in a rapidly changing world. The primary objectives are to develop learners' intellectual, emotional, and physical capabilities. Moreover, the curriculum was designed to foster students' critical thinking skills, problem-solving abilities, and creativity. It also instills moral values and imparts ethical behavior in students. In addition, the curriculum promotes an admiration and appreciation of Thai culture, traditions, and heritage. Furthermore, the core curriculum's purpose is to prepare students for further education in higher education and the workforce after graduation.

The Basic Education Core Curriculum B.E. 2551 (A.D.2008) includes core subjects in different grade levels of high school education: Thai Language, Mathematics,

Science, Social Studies, Health and Physical Education, Arts, and Foreign Languages. Each subject area has learning standards and indicators outlining the expected learning outcomes for high school students at different grade levels guiding teachers in planning pedagogical lessons and evaluating students' learning outcomes and progress. Each specific subject has been detailed with standards and guidelines. For instance, the high school EFL curriculum identifies the key stage indicators and contents. The main contents include language for communication, language and culture, language and relationship with other learning areas, and language and relationship with the community and the world (Ministry of Education, 2001).

The Basic Education Core Curriculum B.E. 2551 (A.D. 2008) prescribes 8 standards for high school EFL curriculum as follows:

Strand 1: Language for Communication

Standard F1.1: Understanding of and potential to interpret what has been heard and read from various kinds of media, and ability to express opinions with proper reasoning.

Standard F1.2: Endowment with language communication skills for exchange of data and information; efficient expression of opinions and feelings.

Standard F1.3: Ability to present data, information, ideas, and perspectives about various matters through speaking and writing.

Strand 2: Language and Culture

Standard F2.1: Appreciation of the relationship between language and culture of native speakers and capacity to use language suitable to events and places.

Standard F2.2: Appreciation of similarities and differences between languages and cultures of native English and Thai speakers, and capacity for accurate and suitable use of language.

Strand 3: Language and Relationship with Other Learning Areas

Standard F3.1: Usage of foreign languages to adapt knowledge with other learning areas, as the foundation for further development and to find knowledge and widen one's worldview.

Strand 4: Language and Relationship with Community and the World

Standard F4.1: Capability to use foreign languages in various school, community, and society situations.

Standard F4.2: Using foreign languages as basic Instruments for further education, livelihood, and learning exchange with the world community.

In attempts to achieve these standards, schools in Thailand have used various types of technology to support English learning in the high school EFL curriculum, including Computer-Assisted Language Learning (CALL), web-based courses, commercial e-learning software, in-house-made e-learning courses, and mobile applications. Therefore, it is important to explore the roles of technology in ESL and EFL education.

2.2 Technology for Language Education

The popular types of technology that have been extensively employed to support language education are Computer-Assisted Language Learning (CALL) and e-learning.

The evolution of CALL occurred after the manufacture of computers. In the past, CALL was developed in the forms of CD-ROM, DOS, intranet, extranet, and Internet for language teaching (Thammasunthron, 2006). The purpose of CALL activities was to focus on the students' conversation, written tasks, and critical thinking (Dina & Ciornei, 2013). Then CALL integrated the technological development of multimedia computers and the World Wide Web. Multimedia resources— texts sound animations, and video —are all at once for use on the computer (Hani, 2014). Currently, a variety of software has been developed for language education and students can learn languages through websites, the Internet, and commercial programs. In this study, CALL and technologies for language education could be considered a part of e-learning.

While Computer-Assisted Language Learning (CALL) and e-learning share many similarities, they are different. CALL focuses exclusively on the use of technology to aid in the teaching and learning of languages. It includes tools and resources designed specifically to improve language skills, such as listening, speaking, reading, and writing (Chapelle, 2009). E-learning is a general term that refers to using electronic technologies to deliver educational content and facilitate learning across a wide range

of subjects and disciplines in a broader scope. It encompasses various forms of online and digital learning, including CALL (Promdee, 2020).

CALL and e-learning could differ in the following aspects. Firstly, they focus on different content areas. CALL centers on language acquisition and linguistic skills (Krashen, 1982). On the contrary, e-learning encompasses a broad range of subjects, from mathematics and science to business and arts (Spender, 2001). Secondly, they employ different tools and resources. CALL utilizes specialized software and applications designed for language learning, such as language labs, pronunciation tools, and vocabulary-building apps (Chapelle, 2005). In contrast, e-learning uses a wide variety of educational tools and platforms that may include learning management systems (LMS), virtual classrooms, online courses, and multimedia content applicable to diverse subjects (Beamish et al., 2002). Thirdly, they employ different instructional methods. CALL often incorporates methods and activities specifically tailored to language learning, such as interactive dialogues, grammar exercises, and language games (Han, 2008). On the contrary, e-learning includes a wide range of instructional methods suitable for different types of content, such as video lectures, interactive simulations, quizzes, and forums (Homan & Macpherson, 2005; Beamish et al., 2002).

Nonetheless, CALL and e-learning have several similarities. Firstly, they both use digital technologies to facilitate learning and allow learners to study at their own pace and access materials from anywhere (Hall & Snider, 2000). Secondly, they employ interactive elements to make learning more engaging (Zhang et al., 2004). Thirdly, they can offer immediate feedback on learner performance (Hall & Snider, 2000). Finally, they utilize data tracking and analytics to track and analyze learner progress to improve educational outcomes (Newton, 2003).

CALL is a specific application of e-learning principles focused on language learning, but e-learning is a broad category encompassing various forms of digital education across multiple disciplines (Hall & Snider, 2000). However, looking at their similar roles in language education, the current study considers CALL and e-learning applied to language education to be in the same category. Therefore, the literature review is focused on developing a research framework for constructing an e-learning evaluation tool that could also be applied to evaluate CALL programs.

Thus, it is essential to examine the development of CALL as the precedence of e-learning for language education. This will provide us with perspectives on how technology has evolved and been invented to bolster language education, especially English as a second and foreign language that has millions of learners all over the world.

2.2.1 Computer-Assisted Language Learning (CALL)

Definitions of CALL

Computer Assisted Language Learning (CALL) is generally known as an approach to language learning and teaching that uses several technological tools to organize a flow of activities closely connected to real-life situations making students' learning more meaningful (Nachoua, 2012).

Richards and Schmidt (2010) define CALL as using computers to learn and teach a second language or a foreign language. CALL may take the form of activities that parallel learning in the classroom through multimedia.

Yunus et al. (2010) state that CALL uses technologies to enhance foreign language skills development.

Koua (2012) states that CALL is an excellent language instruction and acquisition tool that promotes a learner-focused and practical approach to education.

AbuSeileek and Abu Sa'aleek (2012) note that CALL is a method used to enhance various language learning and teaching activities.

Recognized for its learner-centered focus, CALL refers to an approach to language teaching and learning, particularly for second and foreign language learning, that integrates technological tools to facilitate and support language acquisition. CALL incorporates computers and other digital media, e.g. texts, video clips, and animation, to create activities and environments that simulate real-life situations, making language learning more enriching, practical, interactive, engaging, and meaningful.

The advantages of CALL

Computer-Assisted Language Learning (CALL) encompasses a wide range of tools, resources, and methodologies that leverage digital technologies to enhance language acquisition. This includes everything from simple vocabulary drills and grammar exercises to complex interactive multimedia programs and immersive virtual

environments (Almekhlafa, 2010). CALL has evolved from simple drill-based programs to sophisticated, interactive, and immersive learning environments, continually adapting to leverage new technologies and pedagogical insights to enhance language learning (Fotos & Browne, 2004).

CALL uses various technologies, including desktop and laptop computers, mobile devices, language learning software, internet resources, and multimedia tools. CALL programs often include interactive elements, such as quizzes, games, simulations, and multimedia content (audio, video, animations) to engage learners and make the learning process more dynamic and effective (Chapelle, 1998). Many CALL applications offer personalized learning experiences, allowing learners to progress at their own pace and according to their individual needs. Adaptive learning technologies can adjust the content and difficulty based on the learner's performance (Fu, 2013).

CALL systems provide instant feedback on exercises and assessments, helping learners quickly identify and correct their mistakes, which enhances the learning process. The internet provides access to a vast array of authentic language materials, such as news articles, videos, podcasts, and social media, which can enhance learners' exposure to real-world language use (Hubbard, 2013). Many CALL platforms support collaborative learning through forums, chat rooms, and group projects, fostering communication and teamwork among learners (Hani, 2014). In addition, CALL enables learners to study anytime and anywhere, providing flexibility that can fit into different schedules and lifestyles (Dunkel, 1987).

The advantages of CALL have been widely acknowledged. Interactive and multimedia elements make learning more engaging and enjoyable, which can increase motivation and retention (Chapelle, 2001). CALL provides opportunities for learners who might not have access to traditional language learning resources, including those in remote areas or with mobility issues. Technology can streamline the learning process, allowing for more efficient practice and assessment. It also frees up instructors to focus on more complex teaching tasks (Lu et al., 2010). CALL offers a variety of resources and activities that cater to different learning styles and preferences, from visual and auditory learners to kinesthetic learners who benefit from interactive tasks (Hubbard, 2013). In summary, CALL represents a dynamic and flexible approach to language learning that leverages technology to provide a rich and supportive educational environment. It enhances traditional language teaching methods, offering

a wide range of benefits that can improve the effectiveness and accessibility of language education (Wu et al., 2012; Irwin, 2012; Nedeva & Dimova, 2010).

Literature and previous research have shown that CALL can reinforce language learning, in particular, it can help students improve their English skills in various aspects. Several studies have shown that CALL can help students improve their English skills, such as listening, speaking, reading, and writing, in addition to vocabulary and grammar.

CALL allowed students to develop different skills such as listening, speaking, reading, writing, and grammar, as well as the understanding of new vocabulary and the improvement of pronunciation. It is applied to several technological tools and many interesting activities for real-life situations which makes students' learning more meaningful (Hani, 2014). Additionally, using computer-assisted language learning materials can develop student's reading skills in twelve different English language classes in four countries: the USA, Japan, Thailand, and Chile. The experiment took place in four countries that use CALL as instructional material in language classes. The scores for most of the classes in four countries were interpreted as good. The findings have shown that CALL can develop students' reading skills (Chapelle, 2009). Furthermore, CALL can support language learning, and teaching English as a foreign language enhances the students' motivation and their performance in listening at Mohamamed Kheider University, Algeria (Nachoua, 2012).

The similarity between CALL and e-learning for language education is the use of a variety of technologies to support the language learning process and skill development. CALL and e-learning have several common features and functions that facilitate language learning. E-learning, however, is a term that tends to be used more frequently and widely in the present and future. In this research, CALL and e-learning for language education refer to the same entities. The following section reviews the characteristics and advantages of e-learning that bolster language education, especially English as a second language and a foreign language.

2.2.2 E-Learning

E-learning has significantly impacted language learning by providing innovative, flexible, and accessible methods for learners worldwide. E-learning has revolutionized language learning by making it more accessible, flexible, and engaging (Pichugin et al., 2022). The integration of digital tools and online platforms has transformed traditional

language education, making it more interactive, personalized, and engaging. Many e-learning platforms offer structured language courses with a clear curriculum. With a variety of digital tools and online platforms, learners can choose the methods that best suit their preferences and goals, leading to a more personalized and effective language learning experience. E-learning tools and methods are varied ranging from e-learning programs, OpenCourseWare, virtual classrooms, websites, YouTube channels Social Media, Mobile Apps, Virtual Reality (VR), Augmented Reality (AR), and video lessons (Macpherson, 2005).

Definition of E-Learning

E-learning can integrate a wide variety of tools, such as electronic content, audio, videos, e-mail, live chat, online discussions, forums, quizzes, assignments, interactivity, and a learning management system to enhance learning (Ramadiani et al., 2015; Lee, et al., 2011). Moreover, e-learning has hyperlinks that can link contents to facilitate searching. The essence of e-learning is that it is used to support flexible and convenient learning in which students can learn anywhere, and anytime on their needs (Khlaisang, 2012).

E-Learning Elements

Khlaisang (2012) states that e-learning has key elements of the lesson as follows:

1. Electronic content

Content is the most crucial element in an e-learning course. E-learning content is often integrated with multimedia and developed by experts in a specific field. The content should provoke and challenge learners to want to learn more.

2. Learning management system (LMS)

The learning management system is a program that acts as a center for learning management using Internet technology to manage the interaction between teachers and students. Khlaisang and Koraneekit (2009) divide the tools of the learning management system into 6 groups including communication tools, productivity tools, student involvement tools, administration tools, course delivery tools, and curriculum design.

3. Communication tools

Communication tools are tools that allow students to make inquiries and exchange ideas. Communication tools can be divided into two types. It consists of synchronous and asynchronous such as electronic mail, chat, blog, discussion board, etc.

4. Assessments

E-learning requires pre-tests for learners to assess their performance and choose the appropriate lessons for learning. E-learning has to provide quizzes when students enter the lessons in each course and the final examinations at the end of the lessons.

Models of E-Learning Programs (including websites, courseware, and digital platforms)

Khlaisang (2010) studied the proposed models of appropriate websites and courseware for e-learning in higher education. The researcher synthesizes 68 related documents including research reports and academic articles which relate to the proper website, courseware, and e-learning design. The proper model of courseware and e-learning for higher education e-learning consists of 16 components. Details of each component are reported as follows:

1. Multimedia Design

1.1 Background: It should use a light-color background with dark-color text.

1.2 Text: It should be easy to read on the computer screen.

1.3 Graphics: It should be in line with the objectives as well as complementary to the content.

1.4 Audio: It should be clear, stimulating, and attractive with appropriate intonation.

1.5 Video: It should be downloadable and can enhance understanding of concepts in each topic.

2. Link design: It should include quick accessibility to the navigated content.

3. Content design

3.1 Elements: It should contain animated graphics for emphasized content.

3.2 Format: It should be chunked into brief topics representing one concept for one content presentation.

3.3 Quality: It should be in line with the objective and updated.

3.4 Information: It should include course objectives that can enhance the instructional effectiveness and attractiveness of the courseware.

3.5 Assessment: It should help achieve the purposes of the designed curriculum.

4. Interface design

4.1 Navigation: It should present the progress of student learning so that learners know exactly where they are.

4.2 Learning activity: It should provide an opportunity for learners' interaction with teachers and classmates.

4.3 Learning assessment and evaluation: It should be in line with the learning objective and include multiple-choice questions.

4.4 Learning feedback: It should be presented on the same screen with questions and answers.

4.5 SCORM standard: It should employ e-learning compatible with various Learning Management System (LMS) platforms.

Brown and Voltz (2005) emphasize six elements at the heart of effective e-learning design as follows:

1. Activities

A rich activity opens up opportunities for action rather than directs students down a prescribed pathway. A rich activity encourages active learner involvement in choosing the learning experience (Haughey & Muirhead, 2003), and it is complex enough to engage and challenge learners to study.

2 Scenario

Scenarios are always offered by a story, role play, or simulation, within which the activity plays an essential role in helping students contextualize content and participate in meaningful learning.

3. Feedback

Effective use of feedback will enable an e-learning design to set up a dialogue within which the student participates.

4. Delivery

The proper delivery of e-learning should maximize the engagement of the student with the activity, enable the communication of stimulating contexts, and increase opportunities for feedback and reflection.

5. Context

Meaningful and authentic context enhances e-learning, making content relevant, interesting, engaging, and easier to understand. Rich context can support personalized learning, improve retention, and maximize real-world application. Context-rich approaches, for instance, e-learning programs integrated with adaptive learning and scenario-based training, can boost motivation and critical thinking, leading to a more effective and meaningful learning experience.

6. Influence

Effective e-learning needs to consider learner characteristics, adapt to various learning styles, and foster a sense of accomplishment. Personalization, captivating multimedia content, and interactive features and functions enhance learners' engagement and increase their motivation. Meaningful feedback and rewards can reinforce achievement, making learning more efficient, enjoyable, and meaningful. And impactful for diverse learners.

Alias et al. (2012) identify 10 crucial aspects to ensure the success of e-learning: ease of use, visual appeal, connectivity, structure and layout, information availability, reliability, efficiency, support, communication, and security.

In summary, e-learning often consists of key elements, such as electronic content, integrated Learning Management Systems (LMS), communication tools, and assessment functions. An effective design of e-learning incorporates capturing multimedia, structured content, and interactive activities to enhance learner engagement. Essential e-learning aspects incorporate feedback, efficient delivery, and real-world context. The success factors are ease of use, security, reliability, and personalization to boost motivation, increase retention, and provide meaningful learning experiences.

2.3 CALL and E-Learning Evaluation

Similarities

Computer-assisted language earning (CALL) evaluation and e-learning evaluation share many similarities, as they both involve assessing the effectiveness of digital tools and resources for educational purposes. However, there are some differences in their focus and considerations due to the specific context of language learning.

CALL evaluation focuses on assessing the effectiveness of specific language learning software, applications, and platforms in facilitating language acquisition. This includes evaluating how well these tools support the development of language skills, such as reading, writing, listening, speaking, grammar, and vocabulary (Almekhlafi, 2010). Evaluating CALL often involves measuring learners' language proficiency gains over time. This may include pre-tests and post-tests to assess learners' language abilities before and after using CALL tools, as well as ongoing assessments to track progress (Asoodeh, 1993).

CALL evaluation considers the pedagogical principles underlying language learning and teaching. It assesses whether CALL tools align with established language learning theories and methodologies, such as communicative language teaching or task-based learning (Almekhlafa, 2010). CALL evaluation examines learners' experiences and engagement with digital language learning tools. This includes assessing factors, such as usability, learner motivation, interactivity, and learner satisfaction with CALL resources (Fotos & Browne, 2004). CALL evaluation may also consider the integration of digital tools into classroom instruction. It assesses how well CALL resources complement traditional teaching methods and support language learning objectives within formal educational settings (Nachoua, 2012).

E-learning evaluation assesses the effectiveness of digital learning materials and resources across a range of subjects and disciplines, not limited to language learning. This includes evaluating the quality, relevance, and accuracy of educational content (Liu et al., 2011). E-learning evaluation measures learners' achievement of learning outcomes and objectives, which may vary depending on the subject matter. This includes assessing knowledge retention, skill development, and competency attainment (El-Seoud, 2014). E-learning evaluation considers the instructional design of online courses and modules, including the organization of content, instructional

strategies, multimedia elements, and learner interactions. It assesses the overall learning experience and effectiveness of instructional methods (Khlaisang, 2010).

Moreover, E-learning evaluation examines the integration of technology into the learning process and evaluates the usability and functionality of digital learning platforms, tools, and interfaces. This includes assessing accessibility, navigation, and technical support for learners (Prempree et al., 2023. E-learning evaluation measures learners' engagement with online learning materials and their ability to retain information and apply knowledge effectively. This includes assessing factors such as learner motivation, participation, and completion rates (Kakoty et al., 2011).

Differences

Key differences could be observed between the evaluation focus of CALL and e-learning. CALL evaluation specifically focuses on evaluating tools and resources for language learning and teaching (Almekhlafa, 2010), while e-learning evaluation encompasses a broader range of educational subjects and disciplines (Prempree et al., 2023). CALL evaluation often includes assessments of learners' language proficiency gains and progress, which may require specialized language assessments and considerations (DunKel, 1987). CALL evaluation pays particular attention to the alignment of digital tools with established language learning theories and methodologies (Chapelle, 2009), whereas e-learning evaluation may focus more broadly on instructional design principles and strategies (Prempree et al., 2023). Moreover, e-learning incorporates a Learning Management System (LMS) as the central hub for learning management, supports the use of Internet technology, and tracks learners' study progress (Khlaisang, 2012).

In summary, while CALL evaluation shares similarities with e-learning evaluation in terms of assessing effectiveness, engagement, and learning outcomes, it has a specific focus on language learning tools and considerations related to language proficiency development and pedagogical appropriateness.

2.4 Factors Included in E-Learning Evaluation

There has been extensive research related to e-learning evaluation frameworks. Al-Fraihat, et al. (2020) developed the evaluation of the e-learning conceptual model

in one of the UK universities. The quantitative methodology was used to test theoretical models and hypotheses using the survey method. A questionnaire was used to assess the importance of each factor. The determinants of e-learning perceived efficiency were technical system quality, information quality, service quality, educational system quality, support system quality, learner quality, instructor quality, perceived satisfaction, perceived usefulness, and system use.

Furthermore, Liu and Hwang (2011) developed multi-dimensional evaluation criteria for English learning websites, establishing criteria for learning materials, functionality, structure, and information. Additionally, Ozkan and Koseler (2009) developed the multi-dimensional evaluation of e-learning systems in the higher educational context. The criteria included system quality, service quality, content quality, learner quality, instructor attitudes, and supportive issues.

The literature review has informed that e-learning evaluations encompass various aspects and factors, including quality aspects (technical, information, service, educational, and support), user-related factors (learner and instructor), perceived outcomes (satisfaction and usefulness), system-related factors (use, functionality, and structure), and social aspects (communications, culture, connections, and communities).

2.5 E-Learning Evaluation Dimensions and Components

According to the Basic Education Core Curriculum B.E. 2551 (A.D. 2008) of the Ministry of Education in Thailand, high school English subjects have to meet specific requirements and standards. A comprehensive e-learning evaluation tool, thus, needs to be tailored to Thailand's educational context to help EFL teachers select suitable e-learning programs appropriate for learners and the curriculum. Therefore, this review of related literature and research intends to identify and discuss the relevant dimensions and components of e-learning evaluation for the development of an evaluation framework. Table 2.1 reveals that to determine the effectiveness of e-learning

Table 2.1 A Synthesis of E-Learning Evaluation Dimensions

Authors	Evaluation Dimensions										
	Structure	Layout	Design	Course Content	Engagement	Behavior Change	Functionality	System	Support quality	Learner Satisfaction	Learning Outcomes
Prempree, K., & Singto, P. (2023)		√		√		√	√	√	√		
Nalintippayawong, S., Kladyoo, N., & Phengkhlai, J. (2023)	√			√				√		√	√
Phraesrisakul, J. (2023)			√							√	√
Chulerk, P. (2023)			√	√			√	√		√	√
Worapongphat, K. (2022)										√	√
Munpru, S., & Sittiwa, E (2022)				√	√						√
Chobthamdee, B., & Langprayoon, P. (2022)				√		√					√
Phongphiphat, S., & Kloumsri, J. (2022)				√							√
Laksanasut, S. (2021)				√							√
Worasuwanarak, O., & Limtasiri, O. (2021)				√							√
Rumpanpetch, T. (2021)				√						√	√
Uttamaphant, P. (2019)				√						√	√
Lake, P. (2019)				√		√	√	√	√		
Woottipong, K. (2016)				√					√		√
Thipwongsa, S., Kwangsawad, T., & Piyakul, A. (2014)			√	√	√		√				√
Pongpattarakan, P. (2013)	√			√		√				√	
Khongtan, K., & Treephongphan, U. (2013)				√							√
Ratree, S., & Petsangsri, S. (2006)	√	√	√	√	√	√	√	√	√	√	

The majority of studies have focused on learning outcomes designated based on the learning objectives (Nalintippayawong et al., 2023; Phraesrisakul, 2023; Chulerk, 2023; Worapongphat, 2022; Munpru et al., 20022; Chobthamdee et al., 2022; Phongphiphat et al., 2022; Laksanasut, 2021; Worasuwanarak et al., 2021;

Rumpanpetch, 2021; Uttamaphant, 2019; Lake, 2019; Woottipong, 2016; Thipwongsa et al., 2014; Khongtan et al., 2013). The other relevant aspects are learner satisfaction (Nalintippayawong et al., 2023; Phraesrisakul, 2023; Chulerk, 2023; Worapongphat, 2022; Munpru et al., 20022; Laksanasut, 2021; Worasuwanarak et al., 2021; Rumpanpetch, 2021; Uttamaphant, 2019; Pongpattarakan, 2013; Ratree et al., 2006). Usage, system, design, behavior change, engagement, user service, structure, and format have also been included in the evaluation frameworks.

Nonetheless, the development of an e-learning evaluation tool in this study emphasized four dimensions focusing on the e-learning software programs: (1) structure, layout, and design, (2) quality of course contents, (3) functionality and system, and (4) support quality. The methods of Al-Fraihat et al. (2020), Liu, et al.(2011), and Ozkan et al.(2009) have guided the development

1. Structure, Layout and Design

Key aspects of structure, layout, and design emphasize readability, text size (10-20 points), appropriate background colors, and attractive visuals. Clear, easy-to-read text enhances user experience. Proper text size can ensure accessibility, while background colors impact contrast and readability. Visual elements improve engagement and comprehension.

Table 2.2 A Synthesis of E-Learning Evaluation Dimensions (structure, layout and design)

Dimension	Components	References
1. Structure, layout and design	- Use appropriate text and easy to read	- Nalintippayawong et al., (2023) - Prempee & Singto, (2023) - Phraesrisakul, (2023) - Chulerk, (2023) - Al-Fraihat et al., (2020) - Thipwongsa et al., (2014)
	- Use the text size approximately 10-20 points	

Table 2.2 A Synthesis of E-Learning Evaluation Dimensions (structure, layout and design) (continued)

Dimension	Components	References
1. Structure, layout and design	- Use appropriate background colors	- Pongpattarakan, (2013) - Khlaisang, (2010) - Gi-Zen et al., (2010) - Ratree & Petsangsri, (2006)
	- Provide attractive visuals	

2. Quality of Course Content

Essential factors for high-quality course content focus on completeness, accuracy, engagement, flexibility, and structured learning. Content should be comprehensive, valid, authentic, and suitable for different learning levels to help ensure effective comprehension. Authentic materials, including real-life English usage and diverse multimedia (British, American, and international accents), can enhance learning experiences. Moreover, flexible content and interactive activities cater to various learning styles, while structured lessons with progressive difficulty levels aid skill development.

Table 2.3 A Synthesis of E-Learning Evaluation Dimensions (Quality of course content)

Dimension	Component	References
2. Quality of course contents	- Provide complete contents	- Nalintippayawong et al., (2023) - Chulerk (2023) - Munpru & Sittiwa (2022) - Laksanasut (2021) - Worasuwanarak and Limtasiri (2021) - AL-Fraihat et al. (2020) - Pongpattarakan (2013) - Liu et. al. (2010) - Gi-Ze et al. (2010) - Khlaisang (2010)
	- Provide valid contents	
	- Provide suitable content for students' learning levels	
	- Provide interesting content	
	- Provide authentic learning materials of daily English	

Table 2.3 A Synthesis of E-Learning Evaluation Dimensions (Quality of course content) (continued)

Dimension	Component	References
2. Quality of course contents	- Provide flexible contents	- Ozkan and Koseler (2009) - Ratree and Petsangsri (2006)
	- Provide attractive multimedia	
	- Provide authentic multimedia or audios of British, American, and international accents	
	- Provide various learning activities	
	- Arrange lessons and tests according to difficulty levels	

3. Functionality and System

To create a high-quality learning system, the e-learning program should be accessible, functional, and user-friendly; therefore, key features need to be integrated to enhance learning. The e-learning program needs to provide various exam question types, useful feedback, and progress tracking to support learners. Essentially, speech practice tools and a reward system can help maintain learners' motivation. Effective communication tools, e.g. email, chat, forums, and blogs, can encourage interaction; in addition, FAQs and help options provide essential and useful guidance. Components, including user-friendly navigation, search function, clear sitemap, and prompt user interaction, can ensure efficiency. Ultimately, the system must operate smoothly across different platforms and devices.

Table 2.4 A Synthesis of E-Learning Evaluation Dimensions (Functionality and system)

Dimension	Component	References
3. Functionality and system	- Provide various types of exam questions	- Prempee and Singto (2023) - Nalintippayawong et al. (2023) - Chulerk (2023) - Al-Fraihat et al. (2020) - Lake (2019) - Thipwongsa et al. (2014) - Khlaisang (2010) - Liu et al. (2010) - Ozkan and Koseler (2009) - Ratree and Petsangsri (2006)
	- Give useful feedback	
	- Show current learning progress and schedule	
	- Provide helpful speech practice	
	- Have a motivating reward system	
	- Provide useful communication tools e.g. chat, forum, email, blog	
	- Provide a clear sitemap and user-friendly navigation tools	
	- Provide useful help options	
	- Provide a helpful FAQ (Frequently asked questions)	
	- Operate well on different kinds of systems	
	- Provide a convenient search function	
	- Provide prompt interaction with the users	

Table 2.4 A Synthesis of E-Learning Evaluation Dimensions (Functionality and system) (continued)

Dimension	Component	References
	- Provide an appropriate web accessibility	

4. Support quality

Support features can enhance usability, user satisfaction, and overall system effectiveness. Support quality, including components e.g., clear instructions, adequate scalability, and accessible support channels, is significant for a rich e- learning experience. The e-learning system should be able to accommodate a large number of users without technical breakdowns. Clear step-by-step instructions assist users to easily and conveniently navigate the system. Furthermore, timely assistance from a support center, accessible via platforms like Facebook, or call centers, is helpful.

Table 2.5 A Synthesis of E-Learning Evaluation Dimensions (Support qauality)

Dimension	Component	References
4. Support quality	- Adequate for a reasonable amount of users	- Prempee and Singto (2023) - Lake (2019) - Woottipong (2016) - Liu et al. (2010) - Ozkan and Koseler (2009)
	- Provide instructions on how to use the system	
	- Provide support center e.g. Line, Facebook, call center	
	- Offer live support service	
	- Collect feedback from users	

2.6 The Procedure for Evaluating E-Learning

Evaluating an e-learning program often involves a comprehensive process that ensures the effectiveness, quality, and impact of the e-learning program. The evaluation process can be broken down into several key steps, often structured around established models, such as Kirkpatrick's Four Levels of Evaluation (Baskin, 2001), Phillips' ROI Methodology (Lee,2021), or the ADDIE model (Sahaat et al., 2019).

1. **Kirkpatrick's Four Levels of Evaluation**

Baskin (2001) defined Kirkpatrick's Four-Level Evaluation Model as a widely recognized framework for evaluating the effectiveness of training and learning programs. Developed by Donald Kirkpatrick in 1959, it provides a structured approach to assessing the outcomes of educational interventions. The four levels are reaction, learning, behavior, and results.

Reaction: Learners' engagement and satisfaction with the course are measured.

Learning: Knowledge and skills acquired are assessed through quizzes, tests, and assessments.

Behavior: Changes in learners' behavior and the application of knowledge in real-world settings are evaluated.

Results: The overall impact on organizational goals and outcomes is determined.

2. **Phillips' ROI Methodology**

Lee (2021) stated that Phillips' ROI Methodology is a widely used framework for evaluating the return on investment (ROI) of training and development programs. Developed by Dr. Jack Phillips, this methodology builds on Kirkpatrick's Four-Level Evaluation Model by adding a financial perspective to measure the value of training programs. It focuses on the tangible and intangible outcomes of training and connects them to financial metrics. An overview of the key components of Phillips' ROI Methodology is presented as follows:

Reaction and Planned Action: Participants' satisfaction with the program and their intended actions based on the learning experience are measured.

Learning: The knowledge, skills, and competencies gained during the training program are evaluated, typically through assessments and evaluations.

Application and Implementation: The extent to which participants apply the knowledge and skills learned in the training to their workplace or real-world scenarios is assessed.

Business Impact: Measurable improvements in key performance indicators (KPIs) and other organizational metrics as a result of the training program are identified.

Return on Investment (ROI): The financial return is calculated by comparing the monetary benefits derived from the training program to its cost.

3. ADDIE model

Sahaat et al., (2019) presented the ADDIE Model as a popular framework for instructional design that offers a structured method for developing impactful training and learning programs. The acronym ADDIE stands for the model's five sequential phases: Analysis, Design, Development, Implementation, and Evaluation. A summary of each phase is provided below.

Analysis: Learning needs, goals, and objectives are identified, the problem is defined, and the desired learning outcomes are established.

Design: A detailed instructional strategy is developed, including content structure, delivery methods, and the planned use of multimedia elements such as videos, graphics, or animations.

Development: Instructional materials are produced and assembled based on the design phase, including e-learning modules, presentations, handouts, or other content.

Implementation: The training program is delivered to learners in person, online, or in a hybrid format, with support provided through technical assistance or instructional guidance.

Evaluation: Feedback is collected from learners and instructors to assess effectiveness, and improvements are made based on evaluation data to enhance future iterations.

The procedure for evaluating e-learning is essential for producing effective e-learning programs because it ensures the content, design, and delivery meet the learning objectives and the needs of learners. The process will assess whether the quality of the e-learning aligns with the learning goals, enhances learner satisfaction, ensures technological effectiveness, and supports measurable outcomes. Overall, the

procedure for evaluating e-learning is a foundational step in producing e-learning that is impactful, learner-centered, and aligned with educational goals.

2.7 E-Learning Software Programs for ESL and EFL Education

E-learning software programs for language learning incorporate a variety of features and tools designed to facilitate and enhance the process of acquiring a new language. These programs are often interactive, engaging, and accessible, providing learners with comprehensive resources and activities to practice and master their target language. Examples are, such as Schoology, OBEC Content Center, and Virtual School Online. These e-learning software programs often have Social Learning Tools, Discussion Forums, Live Classes, Assessments, Quizzes, and Tests (Kakoty et al., 2011). Overall, e-learning software programs for language learning have been designed to provide an immersive, engaging, and effective learning experience, leveraging technology to overcome traditional language-learning barriers (El-Seoud et al., 2014). The reviews of e-learning software programs for learning English are presented in the following part.

2.7.1 Schoology

Schoology is a robust learning management system (LMS) that facilitates K-12 education and higher education institutions. It offers a comprehensive platform for managing and delivering educational content, tracking student progress, and enhancing communication and collaboration among educators, students, and parents. Schoology offers Course Management tools that teachers can use to create and organize course materials, assignments, and assessments. They can also share resources with students and other educators. The platform offers messaging, discussion boards, and announcements to facilitate communication between teachers, students, and parents. The platform allows customization of courses and learning paths to cater to individual student needs, promoting personalized learning experiences (Schoology Thailand, 2024).

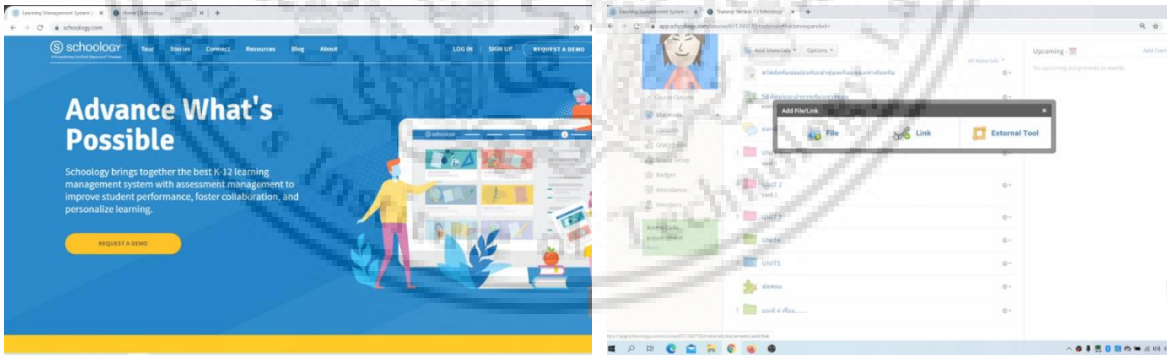
Schoology provides analytics and reporting features to track student progress, engagement, and performance. These insights help educators make data-driven decisions to improve learning outcomes. Schoology includes a built-in gradebook that

allows teachers to track student performance. It supports various types of assessments, including quizzes, tests, and assignments, and provides tools for grading and feedback. Schoology supports group projects and collaborative learning with tools like shared documents, discussion forums, and group assignments. The Schoology mobile app allows students and teachers to access course materials, assignments, and communication tools from smartphones and tablets (Suana et al., 2017).

Schoology is a powerful and versatile LMS that enhances the educational experience for students, teachers, and parents. Its comprehensive features and benefits make it an effective tool for managing courses, fostering communication, and supporting collaborative and personalized learning. By streamlining administrative tasks and providing valuable insights into student performance, Schoology helps educators focus on what matters most: teaching and learning (Dittoe, 2018).

Farizi et al., (2021) stated that Schoology has enhanced learning outcomes and significantly improved the learning process. The recommendations suggest optimizing research and development by exploring other innovative designs that integrate technology into learning activities to better address students' potential.

The Home page of Schoology can be accessed by logging in after registration.



URL: https://www.powerschool.com/personalized-learning-cloud/schoology-learning/

Figure 2.1 Schoology

2.7.2 OBEC Content Center

The OBEC Content Center, often associated with educational initiatives, typically refers to a resource hub provided by the Ohio Board of Education. This center aims to support educators by offering a variety of instructional materials, teaching resources, and professional development opportunities. It might include curriculum guides, assessment tools, and best practices for teaching different subjects. The OBEC Content Center offers several key features designed to assist educators:

The OBEC Content Center is a learning platform, that supports a wide range of content types and is compatible with all devices, consists of five components:

(1) Authoring Tool (AT): This tool is used to create and upload electronic content. It enables users to generate electronic content in ePub file format and upload ePub files to the system. Users can insert tables, images, audio, video, 3D objects, and galleries, and link electronic content from the Content Center. The program also includes an ePub Reader for viewing ePub files, making it suitable for educational, administrative, and other uses.

(2) Content Verification System (CVS): This system is used to review and filter electronic content according to categories such as learning areas, grade levels, and the Dewey Decimal System before publishing it through the Content Center (CC).

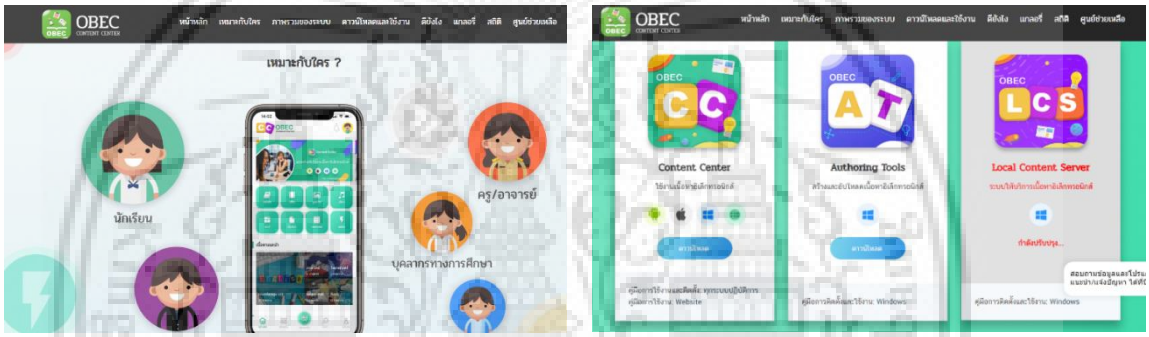
(3) Content Center (CC): This application is used to access and utilize electronic content in eight types: e-books, applications, videos, audio, images, exams, templates, and multimedia flash. It supports searching and filtering content based on three categories: learning areas, grade levels, and the Dewey Decimal System.

(4) Content Management System (CMS): This system is used to manage electronic content, user accounts, access rights, dashboards, various reports, and the number and status of devices and computers accessing the software suite and the electronic content repository or OBEC Content Center.

(5) Local Content Server (LCS): This system provides electronic content services over a local area network (LAN) within schools or organizations. It allows for the updating of new electronic content beyond what is available from the central system. Users can access this content through the Content Center (CC) via the Local Content Server (LCS) (Office of the Basic Education Commission: OBEC, 2021).

The OBEC Content Center is an e-learning platform that collects content across all subjects, including exercises, quizzes, and various learning materials, allowing students to learn at no cost. Learners can access the OBEC Content Center anytime and anywhere, promoting self-directed learning.

The OBEC Content Center is a technology platform that enables learners to access and use electronic content to enhance their knowledge across various subjects. It also allows for reviewing information through e-books or videos, practicing exercises, and utilizing multimedia flash resources. In addition, the OBEC Content Center offers a range of tools that students and teachers can utilize to facilitate teaching and learning.



URL: https://contentcenter.obec.go.th/

Figure 2.2 The Home Page of OBEC Content Center

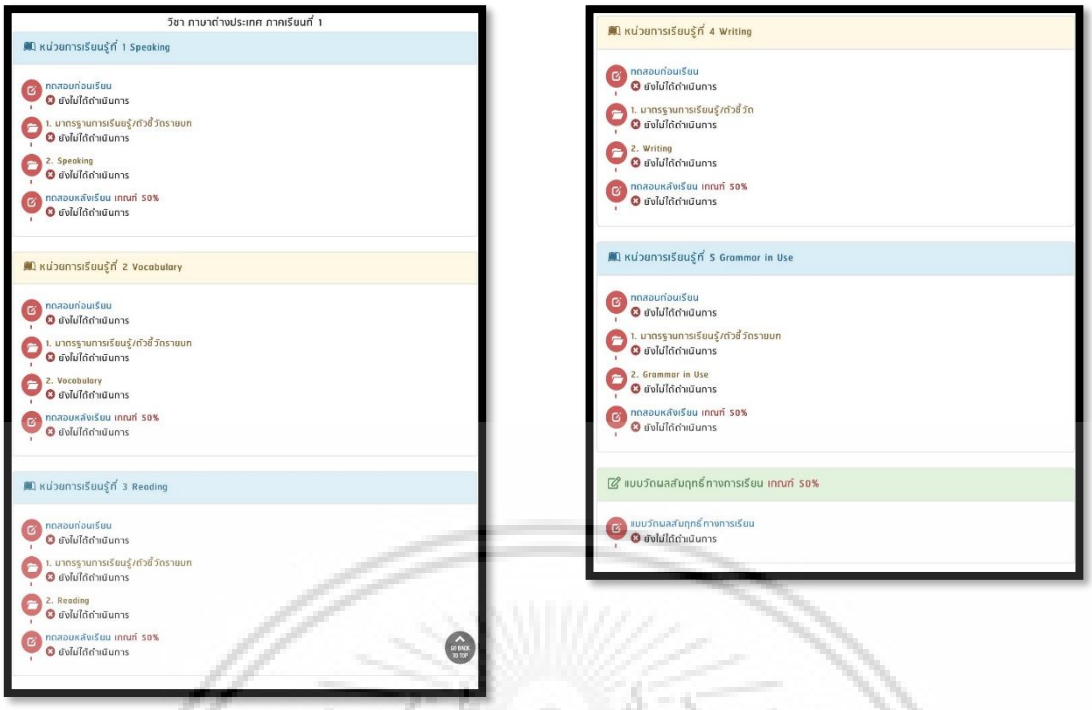
2.7.3 Virtual School Online

Virtual School Online is an e-learning program used to support distance education for Thai secondary and high school students via computers, laptops, and smartphones. It contains eleven content subjects under the Basic Education Curriculum 2001. High school English subjects focus on developing six skills: listening, speaking, vocabulary, reading, writing, and grammar. The English lessons were designed based on learning progression for Mathayom 4 to 6 under the Basic Education Curriculum 2001. Virtual School Online provides various types of multimedia content in the forms of augmented reality, virtual reality, and instructional videos in the lessons to motivate students to learn. The school administrators will determine the school policy for using

the e-learning program either as supplementary materials, complementary lessons, or comprehensive replacements for English subjects.

Students can log in to Virtual School Online lessons by using their username and password. There is a tutorial video that explains how to use the program. Students are assigned by the teacher to use the e-learning lessons intended for their current grade starting from lesson one and they continue until finished. They are required to take the pre-test before starting each lesson and take the post-test after finishing the lesson. Students need to obtain a post-test score of 50 percent or higher to move on to the next lesson. Teachers can monitor the learning progress of students. After students have finished all lessons of their current grade, they are required to take the achievement test. They can come back to revise lessons whenever they want to do.

Figure 2.3 Virtual School Online download, log-in page and instructional video



URL: https://virtualschool.club/

Figure 2.4 Virtual School Online reports on students' learning progress

Table 2.6 A Comparison of Features and Applications of Schoology, OBEC Content Center, and Virtual School Online.

Features and Applications	Schoology	OBEC Content Center	Virtual School Online
Electronic content	✓	✓	✓
Learning management system (LMS)	✓	✓	✓
Communication tools	✓	✓	✓
Assessments	✓	✓	✓
Learning feedback	✓	✓	✓
Cost			✓
Video	✓	✓	✓
Audio	✓	✓	✓
Synchronous	✓	✓	✓
Asynchronous	✓	✓	✓
Support service	✓	✓	✓

Schoology, OBEC Content Center, and Virtual School Online are just a few examples of e-learning software programs employed to support English education in tertiary institutions and high schools in Thailand that integrate various e-learning tools and features to enhance the acquisition of English skills. These e-learning programs are typically interactive, dynamic, engaging, and widely accessible, providing students with comprehensive educational resources to practice and master their English skills. Furthermore, they are equipped with online communities, assessments, quizzes, and discussion forums. These online e-learning platforms intend to create immersive, interactive, engaging, and effective English learning experiences for learners, leveraging educational technology to overcome traditional and limiting language-learning barriers.

2.8 Related Research

To study the field of e-learning evaluation in high school EFL curriculum, it is significant to explore the existing body of research to discover the trends and discern a gap for further study. To identify this knowledge, a literature review of previous studies related to the topic is considered significant. Based on previous research related to e-learning, studies can be categorized into two types: 1) studies focusing on factors influencing the development of e-learning for increased effectiveness, and 2) studies focusing on e-learning evaluation and learner outcomes, including satisfaction with e-learning.

Numerous studies have explored the effectiveness and quality of e-learning systems across various contexts. Ratree and Petsangsri (2006) developed a Learning Management System (LMS) for e-lectures, finding that its functionalities operated effectively, with high participant satisfaction regarding system quality. In this research, the quality of system functions was used to create a survey, focusing on the following aspects: system design, system components, assignment of system functions, database linking and transfer, data presentation support, presentation features, and system utilization. Additionally, Somnuek (2015) compared traditional instruction with instructional media in class, revealing that media-enhanced teaching improved student engagement and achievement while better addressing diverse learning needs. Moreover, Prempree and Singto (2013) identified key factors contributing to e-learning success, such as technical features and learner characteristics, while Lake (2019)

examined variables impacting attitudes toward blended e-learning, noting the importance of system functionality and user perceptions. Nalintippa et al. (2023) further highlighted success factors in e-learning, including information quality and user satisfaction. Research by Phraesrisakul (2023) and others underlined the significance of engaging content and system design in promoting learner motivation. Collectively, these studies emphasize the crucial role of instructional media, effective system design, and support in enhancing e-learning experiences and outcomes for students.

Furthermore, besides the research that studied the factors contributing to the success of e-learning and the development of e-learning in teaching, there are also other studies that examined the effectiveness of e-learning in enhancing students' learning outcomes (Phraesrisakul, 2023; Chulerk, 2023; Worapongphat, 2023; Munpru et al., 2022; Chobthamdee et al., 2022; Phongphiphat et al., 2022; Laksanasut, 2021). The results of these studies indicated that e-learning has a considerable influence on enhancing students' learning ability in primary, secondary, and undergraduate students.

Some research also conducted studies on satisfaction with using e-learning for teaching. The research found that the overall satisfaction level in all aspects was at the highest level (Phraesrisakul, 2023; Chulerk, 2023; Worapongphat, 2023; Rumpanpetch, 2021; Uttamaphant, 2019; Pongpattarakan, 2013; Ratree et al., 2006).

Thanks to the merits of e-learning technologies, e-learning programs can be designed and developed to efficiently deliver educational content, facilitate learning, and foster academic attainment through electronic means. They often incorporate diverse features for organizing course materials, managing online classes, presenting content interactively, monitoring learners' progress, and creating tools for communication, integration, and collaboration. These elements are invaluable and fundamental in online education since they can support diverse and innovative instructional methods and nurture the overall effectiveness of pedagogical activities and learning.

Given insights from the literature review, the present study emphasizes that the evaluation of e-learning systems requires a comprehensive and multi-dimensional approach, considering various factors, such as system quality, content quality, learner and instructor attributes, and support systems. It is essential to acknowledge that each framework provides deep and broad insights into how to enhance the effectiveness and efficiency of e-learning environments. These factors are crucial for developing

robust, interactive, adaptive, and user- centered e- learning platforms. To comprehensively assess e- learning platforms, a multi- dimensional framework is necessary, centering on structure and design, course content quality, system functionality, and support quality. Such an evaluation approach will provide a more thorough and profound understanding of the components and factors contributing to effective and efficient e-learning and can entail improvements for enhanced learning outcomes and user satisfaction.

2.9 Chapter Summary

This chapter presents the literature related to the field of e-learning, serving as an underpinning for the development and execution of the study detailed in Chapter 3. By delving into the various dimensions of e- learning evaluation, the chapter discusses the technology for language education: CALL, e- learning, CALL, and e-learning evaluation, factors included in e-learning evaluation, e-learning software programs for ESL and EFL Education, and related research.

The development of the e-learning evaluation tool in this research is related to The Basic Education Core Curriculum B.E. 2551 (A.D. 2008), which serves as Thailand's foundational curriculum for educational instruction. The Basic Education Core Curriculum B.E. 2551 (A.D. 2008) is a national core curriculum of Thailand. It has defined the content, goals, learning standards, and assessment guidelines for educational programs in Thai schools and provided a framework and directions for enhancing the quality of students' lives (Ministry of Education, 2001). The core curriculum's purpose is to prepare students for further education in higher education and the workforce after graduation. Each subject area has learning standards and indicators outlining the expected learning outcomes for high school students at different grade levels guiding teachers in planning pedagogical lessons and evaluating students' learning outcomes and progress (Ministry of Education, 2001).

The integration of technology in language education prominently features Computer-Assisted Language Learning (CALL) and e-learning, both aimed at supporting learning but with distinct focuses. CALL specifically targets language acquisition, utilizing tools to develop listening, speaking, reading, and writing skills, while e-learning encompasses a wider range of subjects, including languages, through diverse digital

platforms. Despite their differences, both share interactive elements, immediate feedback, and data tracking to enhance the learning experience (Khlaisang, 2012). CALL employs multimedia and adaptive learning tools to create a personalized and engaging environment that motivates students and enhances language acquisition (Brown & Voltz, 2005). Research indicates that CALL can significantly improve various aspects of English skills, such as reading, writing, grammar, and pronunciation across different countries. Collectively, CALL and e-learning contribute to advancing language education by fostering dynamic, flexible, and accessible learning environments, positioning CALL as a vital element of e-learning for language instruction. This research thus intends to develop a tool to evaluate both CALL and e-learning to support the effective development of language skills, particularly for English as a second or foreign language.

Research on e-learning evaluation emphasizes dimensions and components essential for enhancing e-learning effectiveness. The main dimensions include technical systems, information quality, service quality, educational system quality, support systems, and factors related to both learners and instructors (Ozkan et al., 2009). Al-Fraihat et al. (2020) add perceived satisfaction, usefulness, and system use as critical roles, while Liu et al. (2011) highlight cultural and communicative factors in language learning. Comprehensive evaluation frameworks commonly assess learning outcomes, content quality, and learner satisfaction, with other considerations like usability, engagement, structure, and system functionality. The present study identifies four key areas for e-learning evaluation: (1) structure, layout, and design, emphasizing readability, visuals, and layout; (2) course content quality, focusing on content accuracy, relevance, multimedia, and learning activities; (3) functionality and system, covering user interface features, communication tools, feedback, and accessibility; and (4) support quality, ensuring sufficient user support and guidance. Using a framework informed by Al-Fraihat et al. (2020), Liu et al. (2011), and Ozkan et al. (2009), this study outlines a four-phase evaluation tool development to provide thorough, multi-dimensional evaluation results.

The e-learning evaluation process is a structured approach to assess and improve program quality, typically guided by models like Kirkpatrick's Four Levels (Baskin, 2001), Phillips' ROI (Lee, 2021), or ADDIE Model (Sahaat et al., 2019). It begins with defining learning objectives and evaluation goals, followed by selecting criteria such as learner

satisfaction, knowledge acquisition, behavior change, and organizational impact. Evaluation tools like surveys, tests, and performance metrics are then designed, allowing for pre-, during, and post-course assessments, as well as follow-ups to gauge long-term outcomes. The collected data undergoes quantitative, qualitative, and comparative analysis, and results are reported with recommendations for improvements. The process concludes with implementing revisions, enhancing technological and instructional components, and establishing a cycle of continuous monitoring and iterative enhancements to ensure ongoing program effectiveness.

E-learning software programs like Schoology, OBEC Content Center, and Virtual School Online offer robust tools for enhancing English language learning, focusing on interactivity, accessibility, and comprehensive support. These platforms integrate features such as live classes, assessments, and discussion forums, aiming to create an immersive, effective learning environment that leverages technology to overcome traditional language-learning barriers and enhance English proficiency across diverse educational settings. Additionally, there are several research studies related to the evaluation of e-learning in the context of Thailand.

The evaluation of e-learning in high school EFL curricula involves examining existing research to identify trends and gaps for further study. Previous studies on e-learning can be grouped into two main categories: factors influencing e-learning development for effectiveness and the evaluation of learner outcomes and satisfaction. Research has identified key components for successful e-learning, including system functionality, technical support, learner engagement, and quality of instructional design. Studies by Ratree and Petsangsri (2006) and Prempree and Singto (2013) emphasized factors like system design and usability, which influence e-learning success. Other studies by Somnuek (2015) and Lake (2019) highlighted how instructional media and LMS features impact learning achievements and learner attitudes, while researchers such as Nalintippa et al. (2023) used models to link e-learning success to factors like system and information quality, instructor attributes, and diverse assessments. Studies focusing on content quality, interactive system design, and user satisfaction indicate that e-learning can effectively support English language acquisition, increase engagement, and improve academic outcomes across education levels. This literature emphasizes the importance of a multi-dimensional evaluation framework that addresses system quality, content relevance, learner and

instructor attributes, and support mechanisms to enhance e-learning' s effectiveness and user satisfaction.

Nevertheless, several studies have examined e-learning evaluation across various dimensions, but there hasn't been extensive comprehensive e-learning evaluation for high school EFL curriculum. This research focuses on developing an e-learning evaluation tool for the high school EFL curriculum as mandated by the Office of the Basic Education Commission (OBEC) under the Ministry of Education in Thailand and investigate the opinions of high school EFL teachers regarding the e-learning evaluation tool for the high school EFL curriculum. In the next section, this study discusses the process of developing an e-learning evaluation framework and tools.

CHAPTER 3

METHODOLOGY

This study developed an e-learning evaluation tool for the high school EFL curriculum under the Basic Education Core Curriculum B. E. 2551 (A. D. 2008). It examined both quantitative and qualitative data. This mixed-method approach facilitated a more comprehensive understanding of the research participants' opinions on the use of the e-learning evaluation tool for the EFL high school curriculum. This chapter describes the research methodology addressing the research design, research participants, research instruments, data collection, and data analysis.

3.1 Research Design

This study employed a mixed-methods research design, utilizing both quantitative and qualitative approaches to comprehensively evaluate the e-learning tool. The quantitative component included closed-ended questions in a questionnaire, using Likert rating scales to assess participants' opinions on the e-learning evaluation tool. The qualitative component consisted of three open-ended questions, which provided additional insights and captured participant feedback beyond the quantitative data. Quantitative data were analyzed first, followed by qualitative content analysis to support and expand upon the quantitative findings.

The research design was implemented in four stages: (1) **Rationale**, reviewing existing literature to develop a foundational framework and research instruments; (2) **Development**, involving the creation and validation of the e-learning evaluation tool and questionnaire; (3) **Implementation**, conducting data collection; and (4) **Evaluation**, analyzing the results to draw conclusions and recommendations. The validity and reliability of the research instruments were established through expert review and pilot testing, ensuring robustness and consistency in data collection.

3.2 Participants

Participants Evaluating the E-Learning Evaluation Tool

The participants evaluating the e- learning evaluation tool had to meet the following criteria. They were EFL teachers in charge of the learning area of foreign languages in the curriculum. They were from seven extra- large schools in the Secondary Education Service Area Office Pathumthani. These teachers had been using an e-learning program for at least 1 year to teach English to high school students. The researcher collected data from the respondents according to the number of EFL teachers in each school. Table 3.1 presents the schools' names and numbers of EFL teachers.

Table 3.1 The schools' Names and Numbers of EFL Teachers

School names	Number of EFL teachers (Only Thais)
1. Thammasat Khlongluang Withayakhom School	30
2. Thanyarat School	20
3. Suankularbwittayalai Rangsit School	22
4. Pathumwilai School	14
5. Thanyaburi School	26
6. Dipangkornwittayapat (Mattayom Wat Hattasan Kaset) Under the Royal Patronage of His Royal Highness Crown Prince Maha Vajiralongkorn School	12
7. Kanaratbamrungpathumthani school	17
Total	**122**

The researcher sent copies of the e-learning evaluation tool to these EFL teachers at their schools. They were asked to evaluate the e-learning programs or systems that they used to teach English employing the e- learning evaluation tool without intervention from the researcher. After that, the participants answered the questionnaire to assess the e-learning evaluation tool.

3.3 Research Instruments

The research instruments of the study were an e-learning evaluation tool used to evaluate e-learning software programs or e-learning systems for high school EFL curriculum under the Basic Education Core Curriculum B.E. 2551 (A.D. 2008), and an opinion questionnaire for evaluating the e-learning evaluation tool. Both research instruments have been developed and refined to ensure completeness.

3.3.1 The E-Learning Evaluation Tool

This section describes the development and implementation of an e-learning evaluation tool designed to assess an e-learning program for the high school EFL curriculum under the Basic Education Core Curriculum B.E. 2551 (A.D. 2008). The development process was structured in four main phases: Rationale, Development, Implementation, and Evaluation. Figure 3.1 illustrates an overview of the e-learning evaluation tool development phases.

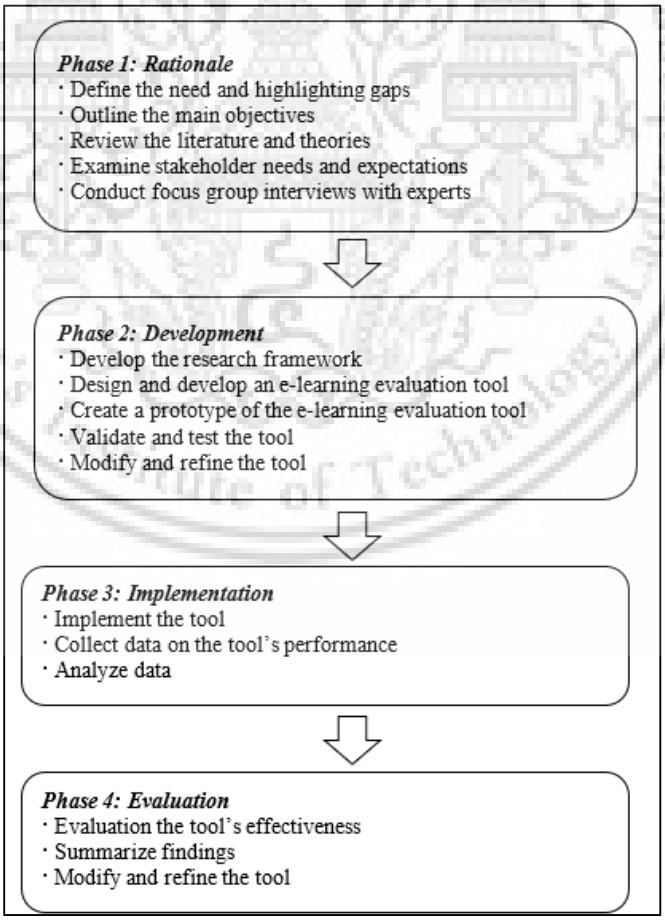


Figure 3.1 The Four Phrases of the Development the E-Learning Evaluation Tool

Figure 3.1 illustrates the four phases in the development of the e-learning evaluation tool, derived from the analysis and synthesis of previous research and literature. The development process comprises four main stages: (1) Rationale, (2) Development, (3) Implementation, and (4) Evaluation. The details of each stage are explained .as follows:

Phase 1: Rationale

The implementation of the planned steps is as follows:

1. The evaluation framework was developed by analyzing and synthesizing the literature and research on e-learning by the researcher. It consisted of the following e-learning evaluation dimensions: structure, layout and design, quality of course contents, functionality and system, and support quality.

2. The e-learning evaluation tool was refined through a focus group discussion conducted via Microsoft Teams. Four experts specializing in educational technology, measurement, and assessment, and EFL provided feedback. The framework was developed by further analyzing and synthesizing related research, and experts' suggestions were incorporated to further improve its design.

Table 3.2 The Experts' Suggestion by an Interview Method in Focus Group

Expert 1 (Educational Technology)	- The researcher should study the components of modern e-learning. Then, an e-learning evaluation tool should be developed to be comprehensive and cover all elements of e-learning. - The e-learning evaluation framework has clearly divided the main topics for assessment.
Expert 2 (Measurement and Assessment)	- The researcher should develop an e-learning evaluation tool that includes components for assessing all dimensions. Thereafter, the validity and reliability of the questionnaire should be assessed, and the results should be interpreted clearly.

Table 3.2 The Experts' Suggestion by an Interview Method in Focus Group (continued)

Expert 3 (EFL)	- The e-learning evaluation tool should be developed to cover all aspects of English language skills, such as listening, speaking, reading, and writing.
Expert 4 (EFL)	- The e-learning evaluation tool should be in accordance with the EFL curriculum in Thailand.

From Table 3.3, the experts' recommendations for the development of a comprehensive e-learning evaluation tool should include the following aspects and components: 1) the components of modern e-learning, 2) the components for assessing all dimensions, 3) the aspects of English language skills, and 4) the English teaching curriculum in Thailand. All of these should be applied to the e-learning evaluation tool to make it more comprehensive and effective in use. Additionally, determining the validity and reliability is essential as it ensures that the evaluation tool is reliable.

Phase 2: Development

The e-learning evaluation tool was created and later discussed on Microsoft Teams with four experts who are specialists in educational technology, measurement and assessment, and EFL education. Incorporating the experts' advice, the researcher adjusted the evaluation framework and the first draft of the e-learning evaluation tool was designed to have three parts;

Part 1 Evaluator information.

The e-learning evaluation tool gathered general background information regarding the participants' gender, age, education, EFL teaching experience, and experience of using e-learning to teach English in high school.

Part 2 E-learning evaluation dimensions.

This part was developed based on the previous data. It contained statements for evaluating the efficiency of e-learning. This part had thirty items on four evaluation dimensions: structure, layout and design, quality of course contents, functionality and system, and support quality. The researcher designed the questionnaire items under each topic.

A five-point Likert rating scale was used to score the levels of agreement on the statements as follows:

Score	Levels of assessment
5	Strongly agree
4	Agree
3	Neutral
2	Disagree
1	Strongly disagree

Table 3.3 E-learning Evaluation Dimensions and Components

Dimensions	Components	References
1. Structure, layout and design	- Use appropriate text and easy to read	- Nalintippayawong et al., (2023) - Prempee & Singto, (2023) - Phraesrisakul, (2023) - Chulerk, (2023) - Al-Fraihat et al., (2020) - Thipwongsa et al., (2014) - Pongpattarakan, (2013) - Khlaisang, (2010) - Gi-Zen et al., (2010) - Ratree & Petsangsri, (2006)
	- Use the text size approximately 10-20 points	
	- Use appropriate background colors	
	- Provide attractive visuals	
2. Quality of course contents	- Provide complete contents	- Nalintippayawong et al., (2023) - Chulerk, (2023) - Munpru & Sittiwa, (2022) - Laksanasut, (2021) - Worasuwanarak & Limtasiri, (2021) - AL-Fraihat et al.(2020)
	- Provide valid contents	
	- Provide suitable content for students' learning levels	
	- Provide interesting content	

Table 3.3 E-learning Evaluation Dimensions and Components (continued)

Dimensions	Components	References
2. Quality of course contents	- Provide authentic learning materials of daily English	- Pongpattarakan, (2013) - Liu et. al., (2010) - Gi-Ze et al. (2010) - Khlaisang, J. (2010) - Ozkan, S., & Koseler, R. (2009) - Ratree & Petsangsri, (2006)
	- Provide flexible contents	
	- Provide attractive multimedia	
	- Provide authentic multimedia or audios of British, American, and international accents	
	- Provide various learning activities	
	- Arrange lessons and tests according to difficulty levels	
3. Functionality and system	- Provide various types of exam questions	- Prempee & Singto, (2023) - Nalintippayawong et al., (2023) - Chulerk, (2023) - Al-Fraihat et al., (2020) - Lake, (2019) - Thipwongsa et al., (2014) - Khlaisang, (2010) - Liu et al., (2010) - Ozkan & Koseler, (2009)
	- Give useful feedback	
	- Show current learning progress and schedule	
	- Provide helpful speech practice	
	- Have a motivating reward system	
	- Provide useful communication tools e.g. chat, forum, email, blog	

Table 3.3 E-learning Evaluation Dimensions and Components (continued)

Dimensions	Components	References
	- Provide a clear sitemap and user- friendly navigation tools	
	- Provide useful help options	
	- Provide helpful speech practice	
	- Operate well on different kinds of systems	
	- Provide a convenient search function	
	- Provide prompt interaction with the users	
	- Provide an appropriate web accessibility	
4. Support quality	- Adequate for a reasonable amount of users	- Prempee & Singto, (2023) - Lake, (2019) - Woottipong, (2016) - Liu et al., (2010) - Ozkan & Koseler, (2009)
	- Provide instructions on how to use the system	
	- Provide support center e.g. Line, Facebook, call center	
	- Offer live support service	
	- Collect feedback from users	

Part 3 Additional comments

The final section of the e- learning evaluation tool employed open- ended questions, allowing respondents to provide in- depth feedback on four main topics

covered in Part 2. This section included five key questions aimed at gathering specific insights:

• In your opinion, what enhancements could be implemented to improve the structure, layout, and overall design?

• In your opinion, what improvements could be made to enhance the quality of the course content?

• In your opinion, what additional features or items would improve the program's functionality and system?

• In your opinion, how could the program's support quality be enhanced?

• Please give other suggestions.

Subsequently, the e-learning evaluation tool was examined by five experts with diverse backgrounds. This group included an educational technology specialist with a doctoral degree in developing and assessing e-learning media, two EFL teaching experts with doctoral degrees and e-learning experience, an assessment expert with a master's degree and experience in high school e-learning evaluation, and a high school EFL curriculum specialist with expertise in curriculum design for e-learning. Each expert provided insights aligned with their fields, ensuring a well-rounded evaluation of the tool's educational quality, content relevance, functionality, and support systems.

These experts verified the e-learning evaluation tool to help ensure its content validity. The Item-Objective Congruence Index (IOC) was used to determine the effectiveness of each item. It has an IOC value equal to or higher than 0.5. The following scores present the criteria of IOC.

+1 = The item is extremely consistent with the objectives.

0 = Not sure that the item is consistent with the objectives.

-1 = The question is inconsistent with the purpose.

The e-learning evaluation tool was returned to the researcher for revision. The results were calculated with the IOC (Item-Objective Congruence) index.

$$IOC = \frac{\Sigma R}{N}$$

The Item-Objective Congruence Index (IOC) was used to determine the effectiveness of each item. Items with a score equal to or higher than 0.5 were considered acceptable. On the other hand, items with a score less than 0.5 were

considered unacceptable. Then, the e-learning evaluation tool was revised, and some new items were added to enhance the completeness of the assessment based on the suggestions of the experts. Furthermore, there were aspects of minor editing and adjustments that were crucial for improving clarity and correcting grammatical errors.

Table 3.4 Results of IOC for Part 1 Evaluator Information

Items	IOC Value	Verdict	Remarks
1. Gender ☐ Male ☐ Female ☐ Other	1	Accepted	-
2. Age ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60	1	Accepted	-
3. Educational Background ☐ Bachelor's degree in ..... ☐ Master's degree in ..... ☐ Doctoral Degree in ..... ☐ other:	1	Accepted	-
4. EFL teaching experience ☐ 1-2 years ☐ 3-4 years ☐ 5-6 years ☐ 7-9 years ☐ more than 10 years	1	Accepted	-
5. Experience with the e-learning system ☐ 1-2 years ☐ 3-4 years ☐ 5-6 years ☐ 7-9 years ☐ more than 10 years	1	Accepted	-

Table 3.5 Results of IOC for Part 2 E-learning Evaluation Dimensions

Items	IOC Value	Verdict	Remarks
2.1 Evaluation Criteria for the Structure, layout and design of the English e-learning.			
1. The e-learning program is designed with a suitable content structure that helps learners understand the main topics and subtopics clearly, and allows them to quickly find the content they need.	0.8	Revised	This item should be divided into three issues: 1) suitable content structure 2) helps learners understand the main topics and subtopics 3) find the content quickly
2. It uses appropriate front and size text which are easy to read. (The appropriate text size approximately 10-20 points.)	1	Accepted	-
3. It uses appropriate background colors.	1	Accepted	-
4. It provides attractive visuals and it can adjust image resolution to fit different screen sizes clearly.	0.8	Revised	This item should be divided into two issues: 1) attractive visuals 2) adjust image resolution
5. It provides various elements, such as fonts, colors, buttons, and icons, that are consistent throughout the program.	1	Accepted	-
6. It is designed to be accessible for learners with disabilities, such as screen reader programs and speech synthesizer software.	1	Accepted	-

Table 3.5 Results of IOC for Part 2 E-learning Evaluation Dimensions (continued)

Items	IOC Value	Verdict	Remarks
2.1 Evaluation Criteria for the Structure, layout and design of the English e-learning.			
7. It operates well on different kinds of systems. It is available online and offline through computers, smartphones, and other electronic equipment.	0.8	Revised	This item should be divided into two issues: 1) operates well on different kinds of systems 2) available online and offline systems
2.2 Evaluation Criteria for Quality of course contents of the English e-learning program.			
1. The English contents of the e-learning program cover the language for communication contents (strand 1) of the Basic Education Core Curriculum 2008 for Mathayom 4 to 6.	1	Accepted	-
2. The English contents of the e-learning program cover the language and culture contents (strand 2) of the Basic Education Core Curriculum 2008 for Mathayom 4 to 6.	1	Accepted	-
3. The English contents of the e-learning program covers the language and relationship with other learning areas (strand 3) of the Basic Education Core Curriculum 2008 for Mathayom 4 to 6.	1	Accepted	-

Table 3.5 Results of IOC for Part 2 E-learning Evaluation Dimensions (continued)

Items	IOC Value	Verdict	Remarks
2.2 Evaluation Criteria for Quality of course contents of the English e-learning program.			
4. The English contents of the e-learning program cover the language and relationship with community and the world (strand 4) of the Basic Education Core Curriculum 2008 for Mathayom 4 to 6.	1	Accepted	-
5. It integrates English skills into the tasks or activities so that students can practice one more skill in each task.	1	Accepted	-
6. It provides the valid contents. (e-learning's content is factually accurate and up-to-date.)	1	Accepted	-
7. It provides the suitable contents for learners' learning levels. (e-learning's content is graded from easy to difficult, according to the level of the learner.)	1	Accepted	-
8. It provides diverse and engaging contents.	0.8	Revised	This item should be divided into two issues: 1) diverse contents 2) engaging contents
9. It provides the interesting contents. (e-learning's content is summarized the key points. It is easy to read and understand.)	1	Accepted	-
10. It organizes the contents from simple to complex, in line with the high school EFL curriculum.	1	Accepted	-

Table 3.5 Results of IOC for Part 2 E-learning Evaluation Dimensions (continued)

Items	IOC Value	Verdict	Remarks
11. It provides the authentic learning materials of daily English. (e-learning's content provides materials that help learners gain the learning experience in the lesson such as TV shows, news segments, documentaries, movie clips and trailers, online videos, and commercials etc.)	1	Accepted	-
12. It provides attractive multimedia.	1	Accepted	-
13. It provides the authentic multimedia.	1	Accepted	-
14. It provides the audios of British, American and international accents.	1	Accepted	-
15. It provides the contents and tasks to engage in various listening and speaking skills.	1	Accepted	-
16. It provides the contents to motivate the students in various listening and speaking activities.	1	Accepted	-
17. It provides the reading materials include a range of texts, news, articles, literatures and academic essays to enhance student's reading comprehension.	1	Accepted	-
18. It provides the different types of writing contents, including letter, essay, and report to enhance student's writing skills.	1	Accepted	-
19. It provides English grammar rules and expansion vocabulary.	1	Accepted	-
20. It provides English vocabulary for students to study further.	1	Accepted	-

Table 3.5 Results of IOC for Part 2 E-learning Evaluation Dimensions (continued)

Items	IOC Value	Verdict	Remarks
21. It provides the assignments after the students finish their lessons.	1	Accepted	-
22. It provides flexible contents for learners, allowing for the adjustment of materials and activities to meet their diverse needs.	1	Accepted	-
23. It offers flexible timing, allowing learners to choose their study schedules according to their own preferences.	1	Accepted	-
24. It promotes a variety of learning styles and learning methods for learners.	0.8	Revised	This item should be divided into two issues: 1) promotes a variety of learning styles 2) promotes a variety of learners' learning methods.
25. It can be adapted to various teaching formats and methods.	1	Accepted	-
2.3 Evaluation Criteria for Functionality and system of the English e-learning.			
1. The e-learning program provides the formative assessment tools according to difficulty levels.	1	Accepted	-
2. It provides the summative assessment tools according to difficulty levels.	0.8	Accepted	-
3. It provides various types of exam questions, and it will reveal the related score or achievement level after learners have finished each test.	0.8	Accepted	-

Table 3.5 Results of IOC for Part 2 E-learning Evaluation Dimensions (continued)

Items	IOC Value	Verdict	Remarks
2.3 Evaluation Criteria for Functionality and system of the English e-learning.			
4. It gives useful feedbacks after learners have finished taking tests, and exams. It can show their errors and explanations.	0.8	Revised	This item should be divided into two issues: 1) gives useful feedbacks 2) shows the errors and explanations
5. It shows current learning progress and inform the schedule to learners.	1	Accepted	-
6. It provides helpful speech practice which can assess the learners' oral skills, and give suitable feedback, such as pronunciation correction for syllable and word stresses.	1	Accepted	-
7. It has a motivating reward system to reinforce learners to continue learning English lessons.	0.8	Revised	This item should be divided into two issues: 1) motivating reward system 2) reinforcing learners
8. It provides useful communication tools, e.g. chat, forum, email, blog, video call for learners to interact with others.	1	Accepted	-
9. It provides a clear sitemap and user-friendly navigation tools.	0.8	Revised	This item should be divided into two issues: 1) provides a clear sitemap

Table 3.5 Results of IOC for Part 2 E-learning Evaluation Dimensions (continued)

Items	IOC Value	Verdict	Remarks
			2) provides navigation tools
10. It provides a convenient search function.	1	Accepted	-
11. It provides a useful help options, e.g. online dictionary, translate tools, checking grammar tools for learner.	1	Accepted	-
12. It provides a helpful FAQ (Frequently asked questions) for learners to find answers to common questions.	1	Accepted	-
13. It operates efficiently, with good responsiveness and minimal issues related to frequent downtime or technical problems that might disrupt learners' activities.	1	Accepted	-
14. It provides security measures to protect user data and privacy, such as secure login, encryption of personal data, and password recovery.	1	Accepted	-
15. It provides data backup and recovery to prevent data loss in case of a system failure, ensuring data restoration and reducing disruptions to learning activities	1	Accepted	-
2.4 Evaluation Criteria for <u>Support quality</u> of the English e-learning.			
1. The e-learning program can accommodate for reasonable amount of users. (more than 1,000 users)	0.8	Accepted	-
2. It provides instructions on how to use the system.	1	Accepted	-

Table 3.5 Results of IOC for Part 2 E-learning Evaluation Dimensions (continued)

Items	IOC Value	Verdict	Remarks
3. It provides support center for learners to ask or send their questions to system administrators.	1	Accepted	-
4. It offers live support services, such as email, chat, and calls, to assist learners with any issues they encounter while using the system.	1	Accepted	-
5. It collects feedback from users to assess their satisfaction.	1	Accepted	-

Table 3.6 Results of IOC for Part 3 Additional Comments

Items	IOC Value	Verdict	Remarks
1. In your opinion, what enhancements could be implemented to improve the structure, layout, and overall design?	0.8	Revised	This item should be divided into three issues: 1) structure 2) layout 3) design
2. In your opinion, what improvements could be made to enhance the quality of the course content?	1	Accepted	-
3. In your opinion, what additional features or items would improve the program's functionality and system?	1	Accepted	-
4. In your opinion, how could the program's support quality be enhanced?	1	Accepted	-

Table 3.6 Results of IOC for Part 3 Additional Comments (continued)

Items	IOC Value	Verdict	Remarks
5. Please give other suggestions.	1	Accepted	-

After receiving suggestions from the five experts, some items of the second part of e-learning evaluation tool were separated and revised into the new version. The e-learning evaluation tool has added 9 new assessment items, increasing the total from 52 to 61 items as shown in Table 3.7.

Table 3.7 Revised Part 2 E-learning Evaluation Dimensions

Items	Evaluation levels				
	5	4	3	2	1
2.1 Evaluation Criteria for the structure, layout and design of the English e-learning. (Increased from7 items to 11 items)					
1. The e-learning program is designed with a suitable content structure.					
2. It helps learners understand the main topics and subtopics clearly.					
3. It allows learners to find the content they need quickly.					
4. It uses the appropriate font and text sizes which are easy to read. (The appropriate text size is approximately 10-20 points.)					
5. It uses appropriate background colors.					
6. It provides attractive visuals.					
7. It can adjust image resolution to fit different screen sizes.					
8. It provides various elements, such as fonts, colors, buttons, and icons, that are consistent throughout the program.					

Table 3.7 Revised Part 2 E-learning Evaluation Dimensions (continued)

Items	Evaluation levels				
	5	4	3	2	1
9. It is designed to be accessible for learners with disabilities, such as screen reader programs and speech synthesizer software.					
10. It operates well on different kinds of systems.					
11. It is available online and offline through computers, smartphones, and other electronic equipment.					
2.2 Evaluation Criteria for quality of course contents of the English e-learning program. (Increased from 25 items to 27 items)					
Items	**Evaluation levels**				
	5	**4**	**3**	**2**	**1**
1.The English contents of the e-learning program cover the language for communication contents of the Basic Education Core Curriculum 2008 for Mathayom 4-6.					
2. The English contents of the e-learning program cover the language and culture contents of the Basic Education Core Curriculum 2008 for Mathayom 4-6.					
3. The English contents of the e-learning program cover the language and relationship with other learning areas of the Basic Education Core Curriculum 2008 for Mathayom 4-6.					
4. The English contents of the e-learning program cover the language and relationship with the community and the world of the Basic Education Core Curriculum 2008 for Mathayom 4-6.					
5. The e-learning program integrates English skills into the tasks or activities so that students can practice one more skill in each task.					

Table 3.7 Revised Part 2 E-learning Evaluation Dimensions (continued)

Items	Evaluation levels				
	5	4	3	2	1
6. It provides the valid content. (e-learning's content is factually accurate and up-to-date.)					
7. It provides suitable content for learners' learning levels. (e-learning's content is graded from easy to difficult, according to the level of the learner.)					
8. It provides diverse content.					
9. It provides engaging content.					
10. It provides interesting contents. (E-Learning's content is summarized the key points. It is easy to read and understand.)					
11. It organizes the contents from simple to complex, in line with the high school EFL curriculum.					
12. It provides authentic learning materials of daily English. (E-Learning's content provides materials that help learners gain the learning experience in the lesson such as TV shows, news segments, documentaries, movie clips and trailers, online videos, commercials, etc.)					
13. It provides attractive multimedia.					
14. It provides authentic multimedia.					
15. It provides audio of British, American, and international accents.					
16. It provides contents and tasks to engage in various listening and speaking skills.					
17. It provides contents to motivate the students in various listening and speaking activities.					
18. It provides reading materials, including a range of texts, news, articles, literature, and academic essays to enhance student reading comprehension.					

Table 3.7 Revised Part 2 E-learning Evaluation Dimensions (continued)

Items	Evaluation levels				
	5	4	3	2	1
19. It provides different types of writing content, including letters, essays, and reports to enhance student's writing skills.					
20. It provides English grammar rules and vocabulary expansion.					
21. It provides English vocabulary for students to study further.					
22. It provides assignments after students finish their lessons.					
23. It provides flexible content for learners, allowing for the adjustment of materials and activities to meet their diverse needs.					
24. It offers flexible timing, allowing learners to choose their study schedules according to their preferences.					
25. It promotes a variety of learning styles for learners.					
26. It promotes the learners' learning methods.					
27. It can be adapted to various teaching formats and methods.					
2.3 Evaluation Criteria for <u>functionality and system</u> of the English e-learning. (Increased from 15 items to 18 items					
1. The e- learning program provides formative assessment tools according to difficulty levels.					
2. It provides summative assessment tools according to difficulty levels.					
3. It provides various types of exam questions, and it will reveal the related score or achievement level after learners have finished each test.					
4. It gives useful feedback after learners have finished taking tests, and exams.					

Table 3.7 Revised Part 2 E-learning Evaluation Dimensions (continued)

2.3 Evaluation Criteria for <u>functionality and system</u> of the English e-learning. (Increased from 15 items to 18 items)					
Items	**Evaluation levels**				
	5	**4**	**3**	**2**	**1**
5. It shows their errors and explanations.					
6. It shows current learning progress and informs the schedule to learners.					
7. It provides helpful speech practice which can assess the learners' oral skills, and give suitable feedback, such as pronunciation correction for syllable and word stresses.					
8. It has a motivating reward system.					
9. It reinforces learners to continue learning English lessons.					
10. It provides useful communication tools, e.g. chat, forum, email, blog, and video call for learners to interact with others.					
11. It provides a clear sitemap.					
12. It provides the navigation tools					
13. It provides a convenient search function.					
14. It provides useful help options, e.g. online dictionary, translation tools, and checking grammar tools for learners.					
15. It provides a helpful FAQ (Frequently asked questions) for learners to find answers to common questions.					
16. It operates efficiently, with good responsiveness and minimal issues related to frequent downtime or technical problems that might disrupt learners' activities.					

Table 3.7 Revised Part 2 E-learning Evaluation Dimensions (continued)

Items	Evaluation levels				
	5	4	3	2	1
17. It provides security measures to protect user data and privacy, such as secure login, encryption of personal data, and password recovery.					
18. It provides data backup and recovery to prevent data loss.					
2.4 Evaluation Criteria for support quality of the English e-learning. (5 items)					
1. The e- learning program can accommodate a reasonable number of users. (more than 1,000 users)					
2. It provides instructions on how to use the system.					
3. It provides a support center for learners to ask.					
4. It offers live support services, such as email, and chat.					
5. It collects feedback from users to assess their satisfaction.					

From the five experts' suggestions, some items of the third part of e-learning evaluation tool should be separated and revised into the new version. The e-learning evaluation tool has added 2 new assessment items, increasing the total from 5 to 7 items as shown in the table below.

Table 3.8 Revised Part 3 Additional Comments

Items
1. In your opinion, what enhancements could be implemented to improve the structure?
2. In your opinion, what changes could be made to optimize the layout?
3. In your opinion, what improvements could be made to enhance the design?
4. In your opinion, what improvements could be made to enhance the quality of the course content?

Table 3.8 Revised Part 3 Additional Comments (continued)

5. In your opinion, what additional feature or items would improve the program's functionally and system?
6. In your opinion, how could the program's support quality be enhance?
7. Please, give the other suggestions.

After interpreting the IOC results and the recommendations from the five experts, the e-learning evaluation tool was revised to enhance the completeness of the assessment. The revised version of the e-learning evaluation tool was then used to assess its reliability.

The e-learning evaluation tool was trialed with 50 EFL teachers selected via purposive sampling from three schools within the Secondary Education Service Area Office, Bangkok 2. All teachers had at least one year of experience in English teaching and had been using the e-learning program for at least one year with high school students. The researcher explained the tool's objectives and the evaluation procedure for the e-learning evaluation tool. Teachers then used the tool to assess an e-learning program they regularly use, which took approximately 30 minutes.

Table 3.9 Cronbach's Alpha Coefficient Levels of Individual Parts of the E-Learning Evaluation Tool.

Part	Cronbach's alpha coefficient levels
1. Structure, Layout, and Design	0.89
2. Quality of Course Contents	0.90
3. Functionality and System	0.92
4. Support Quality	0.81
Overall	**0.94**

According to this table, the Structure, Layout, and Design Dimension achieved Cronbach's alpha coefficient at 0.89, the Quality of Course Content Dimension obtained 0.90, the Functionality and System Dimension received 0.92, and the Support Quality Dimension reached 0.81. The overall Cronbach's alpha coefficient of these four dimensions combined was 0.94. The structure of the e-learning evaluation tool is presented in Table 3.10.

Table 3.10 Revised Version of Part 2 E-learning Evaluation Dimensions

Items	
2.1 Structure, Layout, and Design of the English E-Learning	
1. The e-learning program is designed with a suitable content structure.	Revised
2. It helps learners understand the main topics and subtopics clearly.	Revised
3. It allows learners to find the content they need quickly.	Revised
4. It uses the appropriate font and text sizes which are easy to read. (The appropriate text size is approximately 10-20 points.)	Accepted as original
5. It uses appropriate background colors.	Accepted as original
6. It provides attractive visuals.	Revised
7. It can adjust image resolution to fit different screen sizes.	Revised
8. It provides various elements, such as fonts, colors, buttons, and icons, that are consistent throughout the program.	Accepted as original
9. It is designed to be accessible for learners with disabilities, such as screen reader programs and speech synthesizer software.	Accepted as original
10. It operates well on different kinds of systems.	Revised
11. It is available online and offline through computers, smartphones, and other electronic equipment.	Revised
2.2 Quality of Course Contents of the English E-Learning Program	
1. The English contents of the e-learning program cover the language for communication contents of the Basic Education Core Curriculum 2008 for Mathayom 4-6.	Accepted as original
2. The English contents of the e-learning program cover the language and culture contents of the Basic Education Core Curriculum 2008 for Mathayom 4-6.	Accepted as original
3. The English contents of the e-learning program cover the language and relationship with other learning areas of the Basic Education Core Curriculum 2008 for Mathayom 4-6.	Accepted as original

Table 3.10 Revised Version of Part 2 E-learning Evaluation Dimensions (continued)

Items	
2.2 Quality of Course Contents of the English E-Learning Program	
4. The English contents of the e-learning program cover the language and relationship with the community and the world of the Basic Education Core Curriculum 2008 for Mathayom 4-6.	Accepted as original
5. It integrates English skills into the tasks or activities so that students can practice one more skill in each task.	Accepted as original
6. The e-learning program provides the valid content. (e-learning's content is factually accurate and up-to-date.)	Accepted as original
7. It provides suitable content for learners' learning levels. (e-learning's content is graded from easy to difficult, according to the level of the learner.)	Accepted as original
8. It provides diverse content.	Revised
9. It provides engaging content.	Revised
10. It provides interesting contents. (e-learning's content is summarized the key points. It is easy to read and understand.)	Accepted as original
11. It organizes the contents from simple to complex, in line with the high school EFL curriculum.	Accepted as original
12. It provides authentic learning materials of daily English. (e-learning's content provides materials that help learners gain the learning experience in the lesson such as TV shows, news segments, documentaries, movie clips and trailers, online videos, commercials, etc.)	Accepted as original
13. It provides attractive multimedia.	Accepted as original
14. It provides authentic multimedia.	Accepted as original
15. It provides audio of British, American, and international accents.	Accepted as original

Table 3.10 Revised Version of Part 2 E-learning Evaluation Dimensions (continued)

Items	
2.2 Quality of Course Contents of the English E-Learning Program	
16. It provides contents and tasks to engage in various listening and speaking skills.	Accepted as original
17. It provides the contents to motivate the students in various listening and speaking activities.	Accepted as original
18. It provides reading materials, including a range of texts, news, articles, literature, and academic essays to enhance student reading comprehension.	Accepted as original
19. It provides different types of writing content, including letters, essays, and reports to enhance student's writing skills.	Accepted as original
20. It provides English grammar rules and vocabulary expansion.	Accepted as original
21. It provides English vocabulary for students to study further.	Accepted as original
22. It provides assignments after students finish their lessons.	Accepted as original
23. It provides flexible content for learners, allowing for the adjustment of materials and activities to meet their diverse needs.	Accepted as original
24. It offers flexible timing, allowing learners to choose their study schedules according to their preferences.	Accepted as original
25. It promotes a variety of learning styles for learners.	Revised
26. It promotes the learners' learning methods.	Revised
27. It can be adapted to various teaching formats and methods.	Accepted as original

Table 3.10 Revised Version of Part 2 E-learning Evaluation Dimensions (continued)

Items	
2.3 Functionality and System of English E-Learning.	
1. The e-learning program provides formative assessment tools according to difficulty levels.	Accepted as original
2. It provides summative assessment tools according to difficulty levels.	Accepted as original
3. It provides various types of exam questions, and it will reveal the related score or achievement level after learners have finished each test.	Accepted as original
4. It gives useful feedback after learners have finished taking tests, and exams.	Revised
5. It shows their errors and explanations.	Revised
6. It shows current learning progress and informs the schedule to learners.	Accepted as original
7. It provides helpful speech practice which can assess the learners' oral skills, and give suitable feedback, such as pronunciation correction for syllable and word stresses.	Accepted as original
8. It has a motivating reward system.	Revised
9. It reinforces learners to continue learning English lessons.	Revised
10. It provides useful communication tools, e.g. chat, forum, email, blog, and video call for learners to interact with others.	Accepted as original
11. It provides a clear sitemap.	Revised
12. It provides the navigation tools	Revised
13. It provides a convenient search function.	Accepted as original
14. It provides useful help options, e.g. online dictionary, translation tools, and checking grammar tools for learners.	Accepted as original
15. It provides a helpful FAQ (Frequently asked questions) for learners to find answers to common questions.	Accepted as original

Table 3.10 Revised Version of Part 2 E-learning Evaluation Dimensions (continued)

Items	
2.3 Functionality and System of English E-Learning.	
16. It operates efficiently, with good responsiveness and minimal issues related to frequent downtime or technical problems that might disrupt learners' activities.	Accepted as original
17. It provides security measures to protect user data and privacy, such as secure login, encryption of personal data, and password recovery.	Accepted as original
18. It provides data backup and recovery to prevent data loss.	Accepted as original
2.4 Support Quality of the English E-Learning.	
1. The e- learning program can accommodate a reasonable number of users. (more than 1,000 users)	Accepted as original
2. It provides instructions on how to use the system.	Accepted as original
3. It provides a support center for learners to ask.	Accepted as original
4. It offers live support services, such as email, and chat.	Accepted as original
5. It collects feedback from users to assess their satisfaction.	Accepted as original

Table 3.11 Revised Version of Part 3 Additional Comments

Items	
1. In your opinion, what enhancements could be implemented to improve the structure?	Revised
2. In your opinion, what changes could be made to optimize the layout?	Revised

Table 3.11 Revised Version of Part 3 Additional Comments (continued)

Items	
3. In your opinion, what improvements could be made to enhance the design?	Revised
4. In your opinion, what improvements could be made to enhance the quality of the course content?	Accepted as original
5. In your opinion, what additional feature or items would improve the program's functionally and system?	Accepted as original
6. In your opinion, how could the program's support quality be enhance?	Accepted as original
7. Please, give the other suggestions.	Accepted as original

5. After that, the e-learning evaluation tool was trialed with EFL teachers in seven schools. These teachers are Thais who have been using e-learning to teach English subjects in high schools.

3.3.2 A Questionnaire for Evaluating an E-Learning Evaluation Tool

1. The questionnaire's framework was developed by analyzing and synthesizing the literature and related research.

2. The framework of the questionnaire was designed based on the studies of Ratree, S. & Petsangsri, S. (2006), Somnuek (2015) and Vincent-Lancrin and Stephan (2023). It consists of the following topics:

(1) Structure of the e-learning evaluation tool

(2) Contents of the e-learning evaluation tool

(3) Usefulness of the e-learning evaluation tool

(4) Items of the e-learning evaluation tool

(5) Suitability for high school EFL curriculum

The five-point Likert rating scale was utilized to score the levels of assessment of the e-learning evaluation tool. The score levels are as follows:

Score	Level of assessment
5	Excellent
4	Good

3	Neutral
2	Fair
1	Improve

3. The researcher designed the questionnaire' s items under each dimension. Then the questionnaire was sent to five experts in educational technology, educational education, EFL, and measurement and evaluation to check the questionnaire's validity.

Table 3.12 Results of IOC for Questionnaire Surveying the Opinions of EFL Teachers Regarding the E-Learning Evaluation Tool

Items	IOC Value	Verdict	Remarks
1. The e-learning evaluation tool includes instructions to explain the purpose of the evaluation.	1	Accepted	-
2. It has the correct assessment contents.	1	Accepted	-
3. It contains content that is appropriate and aligned with the high school EFL curriculum based on the Basic Education Core Curriculum B.E. 2551 (A.D.2008).	1	Accepted	-
4. It has the complete contents that cover all topics.	1	Accepted	-
5. It contains accurate content items.	1	Accepted	-
6. It is divided into the appropriate assessment topics.	1	Accepted	-
7. It provides an appropriate sequencing of the assessment content.	1	Accepted	-
8. It provides a structure, layout and design contents.	1	Accepted	-
9. It provides complete contents to assess the quality of English e-learning program.	1	Accepted	-
10. It provides the complete functionality and system contents.	1	Accepted	-

Table 3.12 Results of IOC for Questionnaire Surveying the Opinions of EFL Teachers Regarding the E-Learning Evaluation Tool (continued)

Items	IOC Value	Verdict	Remarks
11. It provides the complete support quality contents.	1	Accepted	-
12. It uses concise, clear, and easy-to-understand language.	0.8	Revised	This item should be divided into three issues: 1) uses the concise language 2) uses the clear language 3) uses the easy-to-understand language
13. It provides up-to-date an assessment contents.	1	Accepted	-
14. It has a reasonable number of questions.	1	Accepted	-
15. It can be practically used for evaluating an e-learning program for high school EFL curriculum with the Basic Education Core Curriculum. B.E. 2551 (A.D. 2008)	1	Accepted	-
16. It can be applied to evaluate e-learning programs for the high school EFL curriculum based on the Basic Education Core Curriculum B.E. 2551 (A.D. 2008).	1	Accepted	-

Table 3.12 Results of IOC for Questionnaire Surveying the Opinions of EFL Teachers Regarding the E-Learning Evaluation Tool (continued)

Items	IOC Value	Verdict	Remarks
17. It provides clear assessment results and can be used to further develop an e-learning program.	1	Accepted	-
18. It can help teachers select quality English e-learning programs that are suitable for their students.	1	Accepted	-

Table 3.13 Results of IOC for the Third Part (Open-Ended Questions)

Items	IOC Value	Verdict	Remarks
1. What additions should the e-learning evaluation tool make to any of the assessment topics?	1	Accepted	-
2. What additional content should the e-learning evaluation tool incorporate into the assessment?	1	Accepted	-
3. Please give other suggestions.	1	Accepted	-

After receiving suggestions from the five experts, some items of the second part of the questionnaire should be separated and revised into the new version. The questionnaire has added 2 new assessment items, increasing the total from 18 to 20 items as shown in the table below.

Table 3.14 Revised Version of the Second Part of the Questionnaire

Items	Evaluation levels				
	5	4	3	2	1
1. The e-learning evaluation tool includes instructions to explain the purpose of the evaluation.					

Table 3.14 Revised Version of the Second Part of the Questionnaire (continued)

Items	Evaluation levels				
	5	4	3	2	1
2. It tool has the correct assessment contents.					
3. It contains content that is appropriate and aligned with the high school EFL curriculum based on the Basic Education Core Curriculum B.E. 2551 (A.D.2008).					
4. It has the complete contents that cover all topics.					
5. It contains accurate content items.					
6. It is divided into the appropriate assessment topics.					
7. It provides an appropriate sequencing of the assessment content.					
8. It provides a complete structure, layout, and design contents.					
9. It provides complete content to assess the quality of the English e-learning program.					
10. It provides complete functionality and system contents.					
11. It provides complete support and quality content.					
12. It uses concise, clear, and easy-to-understand language.					
13. It uses clear language.					
14. It uses easy-to-understand language.					
15. It provides up-to-date assessment content.					
16. It has a reasonable number of questions.					
17. It can be practically used for evaluating an e-learning program for high school EFL curriculum with the Basic Education Core Curriculum. B.E. 2551 (A.D. 2008)					
18. It can be applied to evaluate e-learning programs for the high school EFL curriculum based on the Basic Education Core Curriculum B.E. 2551 (A.D. 2008).					

Table 3.14 Revised Version of the Second Part of the Questionnaire (continued)

Items	Evaluation levels				
	5	4	3	2	1
19. It provides clear assessment results and can be used to further develop an e-learning program.					
20. It can help teachers select quality English e-learning programs that are suitable for their students.					

Table 3.15 Revised Version of the Third Part of the Questionnaire

Items
1. What additions should the e-learning evaluation tool make to any of the assessment topics?
2. What additional content should the e-learning evaluation tool incorporate into the assessment?
3. Please give other suggestions.

4. The researcher revised the questionnaire. It was used for evaluating the quality of an e-learning evaluation tool.

5. After that, the questionnaire was trialed with EFL teachers in three schools. These teachers are Thais who have been using e-learning to teach English subjects in high school.

Table 3.16 Cronbach's Alpha Coefficient Levels of Individual Parts of the Questionnaire.

Part	Cronbach's alpha Coefficient Levels
2	0.83
Overall	0.83

In Table 3.16, Cronbach's alpha coefficient levels of each part are presented. Using the SPSS statistics tool, the coefficient levels were calculated based on 50 responses. Concerning the reliability, the coefficient level is at 0.83. These levels imply

the good quality or reliability of the e-learning evaluation tool items compared to the convention of the study at 0.7 or greater.

Table 3.17 Revised Version of the Second Part of the Questionnaire

Items	
1. The e-learning evaluation tool includes instructions to explain the purpose of the evaluation.	Accepted as original
2. It tool has the correct assessment contents.	Accepted as original
3. It contains content that is appropriate and aligned with the high school EFL curriculum based on the Basic Education Core Curriculum B.E. 2551 (A.D.2008).	Accepted as original
4. It has the complete contents that cover all topics.	Accepted as original
5. It contains accurate content items.	Accepted as original
6. It is divided into the appropriate assessment topics.	Accepted as original
7. It provides an appropriate sequencing of the assessment content.	Accepted as original
8. It provides a complete structure, layout and design contents.	Accepted as original
9. It provides complete contents to assess the quality of the English e-learning program.	Accepted as original
10. It provides the complete functionality and system contents.	Accepted as original
11. It provides the complete support quality contents.	Accepted as original
12. It uses concise, clear, and easy-to-understand language.	Revised
13. It uses clear language.	Revised
14. It uses easy-to-understand language.	Revised
15. It provides up-to-date an assessment contents.	Accepted as original
16. It has a reasonable number of questions.	Accepted as original
17. It can be practically used for evaluating an e-learning program for high school EFL curriculum with the Basic Education Core Curriculum. B.E. 2551 (A.D. 2008)	Accepted as original

Table 3.17 The Revised Version of the Second Part of the Questionnaire (continued)

Items	
18. It can be applied to evaluate e-learning programs for the high school EFL curriculum based on the Basic Education Core Curriculum B.E. 2551 (A.D. 2008).	Accepted as original
19. It provides clear assessment results and can be used to further develop an e-learning program.	Accepted as original
20. It can help teachers select quality English e-learning programs that are suitable for their students.	Accepted as original

Table 3.18 The Revised Version of the Third Part of the Questionnaire

Items	
1. What additions should the e-learning evaluation tool make to any of the assessment topics?	Accepted as original
2. What additional content should the e-learning evaluation tool incorporate into the assessment?	Accepted as original
3. Please give other suggestions.	Accepted as original

Phase 3: Implementation

3.4 Data Collection

The researcher asked the Faculty of Liberal Arts to issue official letters asking for permission forms to be sent to the four experts for a focus group interview. The interview method was used in the online meeting via Microsoft Team.

After designing the e-learning evaluation tool and questionnaire, the researcher asked the Faculty of Liberal Arts to issue official letters asking for permission from the following organizations: the Secondary Education Service Area Office Bangkok 2 to trial the tools and collect data in the three schools in the province, and the seven extra-large schools in the Secondary Education Service Area Office Pathumthani to distribute

the copies of e-learning evaluation tool and questionnaire used to assess the quality of e-learning evaluation tool.

The survey was conducted in May-June 2024. Copies of the e-learning evaluation tool and the questionnaire were sent to the respondents at their schools by the researcher. They were informed about the purposes of the study on the first page of the form. The respondents who met the criteria set for evaluators completed the e-learning evaluation tool in approximately thirty minutes.

After that, the respondents answered the questionnaire to assess the quality of the e-learning evaluation tool in approximately twenty minutes. The copies were returned to the learning area of foreign languages of each school. Then, the researcher picked up copies of the e-learning evaluation tool and questionnaires at the schools. The researcher organized the collected data for analysis.

3.5 Data Analysis

The data collected from the e-learning evaluation tool and the questionnaire examining the opinions of EFL teachers regarding the e-learning evaluation tool were organized and analyzed using the Statistical Package for Social Science (SPSS) and a content analysis method to reveal the quality of the tool.

Data collected from the e-learning evaluation tool

Data obtained from Part 1 and Part 2 were analyzed using the Statistical Package for Social Science (SPSS) and data gathered from Part 3 were analyzed using a content analysis method. The findings are presented in Appendix C.

Data collected from the questionnaire surveying the opinions of high school EFL teachers regarding the e-learning evaluation tool

Part 1: The data of general background information of the respondents were analyzed using the Statistical Package for Social Science (SPSS). The results were reported in terms of frequency distributions and percentages.

Part 2: The data from the questionnaire were analyzed utilizing the Statistical Package for the Social Science (SPSS). The findings were reported in terms of Means and Standard Deviations. The means of the sample rating were calculated and interpreted according to the following criteria:

Score	Mean	Level of satisfaction
5	4.21-5.00	Excellent
4	3.41-4.20	Good
3	2.61-3.40	Neutral
2	1.81-2.60	Fair
1	1.00-1.80	Improve

Part 3: The data of short responses to open-ended questions were analyzed using content analysis. The researcher read all the data to understand and identify the themes of the important data related to the research questions. Then the data were coded and categorized. The findings were reported in accordance with the research questions and research purposes.

Phase 4: Evaluation

The results of the evaluation of e-learning dimensions and components for high school EFL curriculum obtained from a survey of 122 EFL teachers at seven extra-large schools in Pathumthani Province are presented in Appendix C. The opinions of these high school EFL teachers regarding the e-learning evaluation tool were analyzed and they are presented in the next chapter.

3.6 Chapter Summary

This chapter presents the methodology employed by the study addressing the research methodology, research instruments, validity, reliability, data collection, and data analysis to answer the following research questions. What is the process for developing the e-learning evaluation tool? What dimensions and components should be included in the comprehensive e-learning evaluation tool for the high school EFL curriculum mandated by OBEC in Thailand? What are the opinions of high school EFL teachers about the e-learning evaluation tool for the high school EFL curriculum?

The research design for this study adheres to a well-defined research framework. It began with a literature review, which served as the basis for creating the research instruments. These instruments were then assessed for their validity and reliability. The study progressed through four phases: (1) Rationale, (2) Development, (3) Implementation, and (4) Evaluation. The research tools, including the e-learning

evaluation tool and the questionnaire, were rigorously validated and tested to confirm their accuracy and reliability.

The mixed-methods research design was used to highlight the usefulness of both quantitative and qualitative approaches. It could gather numeric data from the quantitative approach and in-depth data from the qualitative approach. Focus group with experts was used to develop an initial e-learning evaluation framework. To develop the e-learning evaluation tool, the researcher first created a draft of the tool's items based on literature reviews. After drafting the items, a focus group with four experts was conducted to discuss the topics related to the e-learning evaluation tool. Subsequently, the criteria for the e-learning evaluation tool were established.

The e-learning evaluation tool and the questionnaire were then sent to five experts for validity assessment. After revising the e-learning evaluation tool and the questionnaire based on the experts' suggestions, the researcher sent copies of both to three schools to pilot test with 50 EFL teachers in the Secondary Education Service Area Office 2, Bangkok to assess the reliability of the instruments. The research instruments were then revised according to the feedback received.

To collect data, the researcher requested permission from the seven extra-large schools in the Secondary Education Service Area Office, Pathum Thani, Pathum Thani Province. The research participants were 122 EFL teachers (all Thais) from the foreign language departments at seven large schools in the Secondary Education Service Area Office, Pathumthani, Pathumthani Province, Thailand. After the 122 EFL teachers completed the e-learning evaluation tool and the questionnaire, the researcher collected both instruments for result analysis and interpretation. The research findings are reported in the next chapter.

CHAPTER 4

RESULTS

The purposes of this study were to develop a comprehensive e-learning evaluation tool for the high school EFL curriculum as mandated by the Office of the Basic Education Commission (OBEC) under the Ministry of Education in Thailand and to investigate the opinions of high school EFL teachers regarding the e-learning evaluation tool for the high school EFL curriculum. The questionnaire was used to collect data from 122 Thai EFL teachers from the foreign language departments at seven extra-large schools in the Secondary Education Service Area Office, Pathum Thani, Province, Thailand. In this chapter, the findings are presented informing about the effectiveness of the e-learning evaluation tool for use in the high school EFL curriculum.

4.1 Development the Comprehensive E-Learning Evaluation Tool for the High School EFL Curriculum as Mandated by the Office of the Basic Education Commission (OBEC) Under the Ministry of Education in Thailand

This section intends to answer the research question: What is the process of developing the e-learning evaluation tool? The development procedure is presented in the methodology chapter in detail, and it can be summarized in four phases as follows:

Phase 1 Rationale

The researchers studied and identified gaps in existing literature and research to define comprehensive e-learning assessment dimensions and components for the tool. Initially, a focus group discussion with four experts in educational technology, measurement, assessment, and EFL was conducted via Microsoft Teams. Their feedback guided the study to refine the evaluation dimensions into four key categories: (1) structure, layout, and design, (2) quality of course content, (3) functionality and

system, and (4) support quality. The insights gained enabled the creation of the first draft of the e-learning evaluation tool.

Phase 2 Development

Based on expert opinions and recommendations, the first draft of the tool was carefully revised and refined. Five experts—two in EFL, one in educational technology, one in measurement and assessment, and one in high school EFL curricula—evaluated the tool. Their reviews assisted the researcher in adjusting the research tool. The tool's content validity was confirmed by the five experts, with an Item-Objective Congruence (IOC) value between 0.8 and 1. Then, the revised version of the e-learning evaluation tool was pilot-tested with 50 EFL teachers from three schools in Bangkok, using a purposive sampling method. The reliability of the tool was assessed through Cronbach's alpha, with the highest coefficient at 0.92, indicating strong internal consistency. The overall reliability score reached 0.94, surpassing the benchmark of 0.7.

Phase 3 Implementation

Subsequently, the e-learning evaluation tool was further trialed with 122 EFL teachers from seven large secondary schools in Pathumthani. Teachers evaluated the e-learning program they employed to teach high school English subjects mandated by the Office of the Basic Education Commission, and they then completed a questionnaire assessing the tool's quality. The study was conducted from May to June 2024.

Phase 4 Evaluation

The robustness and effectiveness of the e-learning evaluation tool developed by the current study were analyzed based on feedback gathered from participating teachers via a questionnaire. The results revealed and confirmed the tool's comprehensive framework, strong content validity, and high reliability, with a Cronbach's alpha coefficient of 0.94. The tool, then, successfully integrated expert suggestions, and research findings, making it a robust instrument for assessing e-learning programs in Thailand.

Table 4.1 presents the dimensions and components of e-learning evaluation to answer the following research question: What dimensions and components should be

included in the comprehensive e-learning evaluation tool for the high school EFL curriculum mandated by OBEC in Thailand?

Table 4.1 Dimensions and Components of E-learning Evaluation

Dimensions	Components
1. Structure, layout and design	- Designed with a suitable content structure.
	- Help learners understand the main topics and subtopics clearly.
	- Allow learners to find the content they need quickly.
	- Provide attractive visuals .
	- Use the appropriate font and text sizes.
	- Uses appropriate background colors.
	- Provides attractive visuals.
	- Adjust image resolution to fit different screen sizes.
	- Provides various elements.
	- Designed to be accessible for learners with disabilities.
	- Operates well on different kinds of systems.
	- Online and offline through computers, smartphones, and other electronic equipment.
2. Quality of course content	- Covers the language for communication contents of the Basic Education Core Curriculum 2008 for Mathayom 4-6.
	- Covers the language and culture contents of the Basic Education Core Curriculum 2008 for Mathayom 4-6.
	- Covers the language and relationship with other learning areas of the Basic Education Core Curriculum 2008 for Mathayom 4-6.

Table 4.1 A Summary of Dimensions and Components (continued)

Dimensions	Components
2. Quality of course content	- Covers the language and relationship with the community and the world of the Basic Education Core Curriculum 2008 for Mathayom 4-6.
	- Integrates English skills into the tasks or activities.
	- Provides the valid content.
	- Provides suitable content for learners' learning levels.
	- Provides diverse content.
	- Provides engaging content.
	- Provides interesting content.
	- Organizes the contents from simple to complex, in line with the high school EFL curriculum.
	- Provides authentic learning materials of daily English.
	- Provides attractive multimedia.
	- Provides authentic multimedia.
	- Provides audio of British, American, and international accents.
	- Provides content and tasks to engage in various listening and speaking skills.
	- Provides the content to motivate the students in various listening and speaking activities.
	- Provides reading materials to enhance student reading comprehension.
	- Provides different types of writing to enhance student's writing skills.
	- Provides English grammar rules and vocabulary expansion.
	- Provides English vocabulary for students to study further.

Table 4.1 A Summary of Dimensions and Components (continued)

Dimensions	Components
	- Provides assignments after students finish their lessons.
	- Provides flexible content for learners.
	- Offers flexible timing.
	- Promotes a variety of learning styles for learners.
	- Promotes the learners' learning methods.
	- Adapts to various teaching formats and methods.
3. Functionality and System	- Provides formative assessment tools according to difficulty levels.
	- Provides summative assessment tools according to difficulty levels.
	- Provides various types of exam questions, and it will reveal the related score or achievement level after learners have finished each test.
	- Gives useful feedback after learners have finished taking tests.
	- Shows current learning progress and informs the schedule to learners.
	- Provides helpful speech practice which can assess the learners' oral skills and give suitable feedback.
	- Consists of a motivating reward system.
	- Reinforces learners to continue learning.
	- Provides useful communication tools.
	- Provides a clear sitemap.
	- Provides the navigation tools.
	- Provides a convenient search function.
	- Provides useful help options.
	- Provides a helpful FAQ (Frequently Asked Questions).

Table 4.1 A Summary of Dimensions and Components (continued)

Dimensions	Components
3. Functionality and System	- Operates efficiently, with good responsiveness and minimal issues related to frequent downtime or technical problems that might disrupt learners' activities.
	- Provides security measures to protect user data and privacy.
	- Provides data backup and recovery to prevent data loss.
4. Support Quality	- Can accommodate a reasonable number of users.
	- Provides instructions on how to use the system.
	- Provides a support center for learners to ask.
	- Offers live support services, such as email, and chat.
	- Collects feedback from users to assess their satisfaction.

In summary, the e-learning evaluation tool developed was comprehensive for the high school EFL curriculum mandated by the Office of the Basic Education Commission (OBEC) under the Ministry of Education in Thailand. The opinions of high school EFL teachers regarding the e-learning evaluation tool are presented in the following section.

4.2 Opinions of High School EFL Teachers Regarding the E-Learning Evaluation Tool for the High School EFL curriculum

This section intends to answer the following research question: What are the opinions of high school EFL teachers about the e-learning evaluation tool for the high school EFL curriculum?

4.2.1 Demographic Information

This part showed the frequency and percentage of demographic information of participants. The participants were 122 EFL teachers in seven extra-large schools in the Secondary Education Service Area Office Pathumthani.

Table 4.2 The Demographic Information of Participants

Characteristic	Description	No.	Percentage
Gender	Male	29	24%
	Female	93	76%
Age	21-30	39	32%
	31-40	52	43%
	41-50	20	16%
	51-60	11	9%
Education Background	Bachelor degree	89	73%
	Master's degree	33	27%
	Doctoral Degree	-	-
EFL teaching experience	1-2 years	8	7%
	3-4 years	22	18%
	5-6 years	18	15%
	7-9 years	48	39%
	more than 10 years	26	21%
Experience using e-learning for teaching	1-2 years	8	7%
	3-4 years	71	58%
	5-6 years	36	29%
	more than 7 years	7	6%

Male teachers constituted 24 percent, totaling 29 individuals, while female teachers represented 76 percent, comprising 93 individuals. Thirty-nine (32%) teachers were in the age range of 21-30 years old, 52 (43%) were 31-40, 20 (16%) were 41-50, and 11 (9%) were 51-60. Eighty-nine instructors (73%) hold their bachelor's degrees, and 35 (27%) teachers obtained their master's degrees. Twenty-six (21%) have had more than 10 years of teaching experience, 48 (39%) have 7-9 years, 18 (15%) have 5-6 years, 22 (18%) have 3-4 years, and 8 (7%) have 1-2 years. Seven (6%) teachers

have used e-learning for more than 7 years, 36 (29%) for 5-6 years, 71 (58%) for 3-4 years, and 8 (7%) for 1-2 years. The findings can ensure that these participants meet the inclusion criteria and that the data collected are eligible for analysis.

Table 4. 3 presents the Cronbach' s Alpha Coefficient levels of e- learning evaluation dimensions from data collected from 122 EFL Teachers.

Table 4.3 Cronbach's Alpha Coefficient Levels for E-learning Evaluation Dimensions (From 122 EFL Teachers)

E-learning Evaluation Dimensions	Cronbach's Alpha Coefficient Levels
1. Structure, Layout, and Design	0.83
2. Quality of Course Contents	0.88
3. Functionality and System	0.82
4. Support Quality	0.81
Overall	**0.92**

4.2.2 Opinions of High School EFL Teachers Regarding the E-Learning Evaluation Tool for the High School EFL Curriculum

The 122 EFL teachers in seven extra-large schools in Pathumthani evaluated the e-learning evaluation tool for the high school EFL curriculum. The EFL teachers were asked to respond to the questionnaire regarding the effectiveness of the e-learning evaluation tool on a five-point Likert rating scale. The scale reflects the levels of users' opinions on the tool's effectiveness. The levels were defined as follows: "1" refers to "Poor," "2" refers to "Fair," "3" refers to "Neutral," "4" refers to "Good," and "5" refers to "Excellent." Means and standard deviations are indicated and interpreted as illustrated in Table 4.4.

Table 4.4 The Opinions of EFL Teachers Regarding the E-Learning Evaluation Tool

No.	Questionnaire item	Mean value	Standard Deviation	Interpretation
1	The e-learning evaluation tool includes instructions to explain the purpose of the evaluation.	4.70	0.462	Excellent

Table 4.4 The Opinions of EFL Teachers Regarding the E-Learning Evaluation Tool (continued)

No.	Questionnaire item	Mean value	Standard Deviation	Interpretation
2	It tool has the correct assessment contents.	4.73	0.482	Excellent
3	It contains content that is appropriate and aligned with the high school EFL curriculum based on the Basic Education Core Curriculum B.E. 2551 (A.D.2008).	4.56	0.693	Excellent
4	It has the complete contents that cover all topics.	4.42	0.495	Excellent
5	It contains accurate content items.	4.42	0.573	Excellent
6	It is divided into the appropriate assessment topics.	4.62	0.487	Excellent
7	It provides an appropriate sequencing of the assessment content.	4.41	0.613	Excellent
8	It provides a complete structure, layout and design contents.	4.40	0.555	Excellent
9	It provides complete contents to assess the quality of the EFL e-learning program.	4.41	0.494	Excellent
10	It provides the complete functionality and system contents.	4.21	0.695	Excellent
11	It provides the complete support quality contents.	4.30	0.724	Excellent

Table 4.4 The Opinions of EFL Teachers Regarding the E-Learning Evaluation Tool (continued)

No.	Questionnaire item	Mean value	Standard Deviation	Interpretation
12	It uses concise, clear, and easy-to-understand language.	4.24	0.844	Excellent
13	It uses clear language.	4.35	0.715	Excellent
14	It uses easy- to- understand language.	4.17	0.768	Good
15	It provides up- to- date an assessment contents.	4.67	0.567	Excellent
16	It has a reasonable number of questions.	4.11	0.769	Good
17	It can be practically used for evaluating an e-learning program for high school EFL curriculum with the Basic Education Core Curriculum. B.E. 2551 (A.D. 2008)	4.56	0.499	Excellent
18	It can be applied to evaluate e-learning programs for the high school EFL curriculum based on the Basic Education Core Curriculum B.E. 2551 (A.D. 2008).	4.36	0.546	Excellent
19	It provides clear assessment results and can be used to further develop an e-learning program.	4.75	0.473	Excellent
20	It can help teachers select quality English e-learning programs that are suitable for their students.	4.77	0.422	Excellent
Overall		**4.46**	**0.124**	Excellent

The 122 EFL teachers' opinions on the overall aspects of the e-learning evaluation tool were highly positive. They viewed that the e-learning evaluation tool included instructions to explain the purpose of the evaluation (4.70), a clear structure, layout, and design content (4.40), and a reasonable number of questions (4.11). Concerning the item characteristics, the EFL instructors saw that the tool used clear (4.35), concise (4.27), and easy-to-understand (4.17) language.

Looking at the content of the e-learning evaluation tool, the EFL instructors thought that the tool had correct assessment content (4.73), provided up-to-date assessment content (4.67), presented clear assessment topics (4.62), and was appropriate and aligned with the high school EFL curriculum as prescribed by the Basic Education Core Curriculum B.E. 2551 (4.56). In addition, the teachers agreed that the tool had complete content covering all topics (4.42), and contained accurate content items (4.42).

Considering the usefulness of the e-learning evaluation tool, the EFL teachers believed that the tool could help teachers select quality English e-learning programs suitable for their students (4.77), and provide clear assessment results that can be used to further develop English e-learning programs (4.75). Moreover, they anticipated that the e-learning evaluation tool could practically be used for evaluating e-learning programs for the high school EFL curriculum of the Basic Education Core Curriculum (4.56).

4.2.3 Additional Comments

This part presents the results of additional comments from the third part of the questionnaire. In this part, three open-ended questions were asked to gather additional comments regarding the e-learning evaluation tool. The qualitative findings supported the quantitative results. The questions in this part included the following: "What additions should the e-learning evaluation tool make to the assessment topics?", "What additional content should the e-learning evaluation tool incorporate into the assessment?", and "Please give other suggestions." A content analysis method was utilized to extract themes shared among the data. However, some responses may encompass multiple themes. The results in Table 4.5 indicate different themes and the frequencies of comments from the respondents.

Table 4.5 The Additional Opinions of EFL Teachers Regarding the E-Learning Evaluation Tool for High School EFL Curriculum of Basic Education Core Curriculum B.E. 2551 (A.D. 2008)

Question 1: What additions should the e-learning evaluation tool make to the assessment topics?			
No.	**Theme**	**Frequency**	**Percent**
1	The e-learning assessment should include topics related to evaluating the quality of images, language, sound, and typography.	18	14.75
2	The e-learning evaluation tool should include topics about the teaching process in e-learning lessons.	15	12.30
Question 2: What additional content should the e-learning evaluation tool incorporate into the assessment?			
No.	**Theme**	**Frequency**	**Percent**
1	The e-learning evaluation tool should include content about diverse methods of learning assessment and evaluating outcomes.	12	9.83
2	The e-learning assessment should include content related to evaluating the quality of music and narration used in the e-learning program.	8	6.56
3	The e-learning assessment should include content about appropriate and aligned tests of the lessons.	5	4.10
4	The e-learning evaluation tool should include content about the efficiency of reporting test results.	3	2.46
5	The e-learning evaluation tool should include content about the participation of learners and instructors in the e-learning environments.	2	1.64

Table 4.5 The Additional Opinions of EFL Teachers Regarding the E-Learning Evaluation Tool for High School EFL Curriculum of Basic Education Core Curriculum B.E. 2551 (A.D.2008) (continued)

No.	Theme	Frequency	Percent
6	The e-learning evaluation tool should include content about the convenience of self-printing certificates through an online system.	1	0.81

Question 3: Please give other suggestions.			
No.	**Theme**	**Frequency**	**Percent**
1	The number of questions in the e-learning evaluation tool is quite large; therefore, combining similar items may reduce the total number of items.	35	28.67

Table 4.5 presents additional opinions of EFL teachers regarding the e-learning evaluation tool suggesting that the following components for the e-learning evaluation tool should be added: The quality of images, language, sound, and typography, diverse methods of learning assessment, the quality of music and narration, the efficiency of test result reports, the participation of learners and instructors, the convenience of self-printing certificates through an online system, and a large number of questions. These insights, coupled with the quantitative findings presented in the previous section, were considered and incorporated into the revised and final version of the e-learning evaluation tool presented in Appendix A.

4.3 Chapter Summary

This chapter commences with an overview of the participant's demographic characteristics and describes the development phases of the e-learning evaluation tool for the high school EFL curriculum mandated by the Office of the Basic Education Commission (OBEC) under the Ministry of Education in Thailand. In Phase 1, the researcher established a rationale by identifying assessment gaps from the literature

review and refining the framework with input from experts. The e-learning evaluation framework included 4 dimensions: 1) structure, layout, and design; 2) quality of course content; 3) functionality and system, and 4) support quality. In Phase 2, the tool was revised based on expert feedback, and tested with 50 EFL teachers, achieving high reliability scores (Cronbach's alpha of 0.94 overall). In Phase 3, the tool was distributed to 122 EFL teachers at the target schools for a comprehensive evaluation. Finally, Phase 4 focused on evaluating the tool's effectiveness, revealing strong reliability and validity, which confirmed the tool's robustness for assessing high school EFL e-learning programs in line with Thailand's educational standards.

The chapter sheds light on the opinions of 122 high school EFL teachers from seven extra-large schools in Pathumthani regarding the effectiveness of the e-learning evaluation tool for the high school EFL curriculum. The demographic data showed the majority of female teachers (76%) with varied teaching experience and e-learning usage. The e-learning evaluation tool was assessed across four dimensions, using a five-point Likert scale. The teachers provided highly positive responses, noting that the tool included instructions to explain the purpose of the evaluation (4.70), a well-organized structure and layout (4.40), and an appropriate number of questions (4.11). They found the language used in the tool clear (4.35), concise (4.27), and understandable (4.17). In terms of content, the EFL teachers rated the tool as having accurate assessment content (4.73), up-to-date topics (4.67), and alignment with the Basic Education Core Curriculum (4.56). They also felt the tool was practical, useful for selecting quality e-learning programs (4.77), and effective in providing clear, actionable assessment results (4.75).

Additional comments highlighted suggestions for expanding the tool, such as improving image quality, adding diverse assessment methods, enhancing music and narration, offering self-printing certificates, and increasing the number of assessment questions. These recommendations point to areas for refinement to further enhance the tool's effectiveness in supporting high school EFL education. The research findings are discussed in the following chapter.

CHAPTER 5

CONCLUSION AND DISCUSSION

This chapter discusses and concludes the study's findings, focusing on the development of the e-learning evaluation tool and the analysis of the opinions of 122 EFL teachers regarding its quality. Based on both quantitative and complementary qualitative analyses of feedback from the 122 EFL teachers within the Secondary Education Service Area Office in Pathumthani, the research found that the e-learning evaluation tool is generally effective and suitable for evaluating e-learning programs for high school EFL curriculum under the Basic Education Core Curriculum B.E. 2551 (A.D. 2008) in Thailand. This chapter also discusses limitations and provides recommendations for future research on e-learning evaluation.

5.1 Summary of the Findings

The objectives of the present study were to develop a comprehensive e-learning evaluation tool for the high school EFL curriculum proposed by the Office of the Basic Education Commission (OBEC) under the Ministry of Education in Thailand. In addition, the study intended to investigate the opinions of high school 122 EFL teachers regarding the effectiveness of the e-learning evaluation tool for the high school EFL curriculum. The results of the study are as follows:

The development process involved a systematic literature review, including the analysis and synthesis of literature and research on the development processes of e-learning evaluation tools. The procedure for developing the e-learning evaluation tool was adapted from the ideas of Al-Fraihat et al. (2020), Liu et al. (2011), and Ozkan et al. (2009).

The current research proceeded in four phases as follows:

Phase 1. Rationale

The e-learning evaluation tool was developed by studying the needs and problems of using e-learning for high school EFL curricula in Thailand. Then, the researcher analyzed and synthesized the relevant literature and previous research on

e-learning. The initial version of the e-learning evaluation framework included content quality, instructional design, technical functionality, and support systems. Later, the framework was discussed with four experts in a focus group meeting via Microsoft Teams. After the focus group interview, the e-learning evaluation framework was revised based on the experts' suggestions.

Phase 2. Development

The e-learning evaluation tool was developed consisting of four e-learning evaluation dimensions: (1) structure, layout, and design, (2) quality of course content, (3) functionality and system, and (4) support quality. The tool consisted of three parts: Part 1 General background information (5 items), Part 2 Evaluation of English e-learning (52 items), and Part 3 Open-ended questions (5 items). Later, the first draft of the e-learning evaluation tool was examined by five experts. An IOC form was used to evaluate content validity by one expert in educational technology, two experts in EFL, one expert in measurement and assessment, and one expert in high school EFL curriculum. The IOC Indexes of the e-learning evaluation tool ranged from 0.8 to 1. Subsequently, the e-learning evaluation tool was revised according to the recommendations of the five experts.

After that, the e-learning evaluation tool was trialed with 50 EFL teachers in three schools of the Secondary Education Service Area Office Bangkok 2. They have had a minimum English teaching experience of one year and have been using e-learning programs to teach high school English for at least a year. These EFL teachers utilized the e-learning evaluation tool to evaluate the e-learning program they frequently used to teach high school English as mandated by the Office of the Basic Education Commission. The results of this trial with the 50 EFL teachers were calculated for Cronbach's alpha coefficient to establish the reliability of the research instrument using the Statistics Package for Social Sciences (SPSS). The reliability was 0.94. Later, the second draft of the e-learning evaluation tool was further revised based on the experts' suggestions.

Phase 3. Implementation

The survey was conducted from May-June 2024. Copies of the e-learning evaluation tool and the questionnaire for evaluating the e-learning evaluation tool were sent to the 122 EFL teachers at the seven extra-large schools in the Secondary

Education Service Area Office Pathumthani by the researcher. They were asked to use the e-learning evaluation tool to evaluate the e-learning program that they used to teach high school EFL curriculum. After that, the EFL teachers answered the opinion questionnaire to rate their opinions on the e-learning evaluation tool. Later, the researcher picked up copies of the e-learning evaluation tool and opinion questionnaire at their schools.

Phase 4. Evaluation

The data from the returned copies of the e-learning evaluation tool and questionnaire examining their opinions on the effectiveness of the tool were analyzed to report means, standard deviations, and qualitative findings.

Opinions of High School EFL Teachers Regarding the E-Learning Evaluation Tool for the High School EFL Curriculum

The research surveyed teachers' opinions about the developed e-learning evaluation tool by trialing its usability and gathering feedback through a questionnaire. The EFL teachers' opinions on the e-learning evaluation tool were strongly positive. They thought the tool had the correct format (4.70) and appreciated its clear structure, layout, and content design (4.40), as well as a reasonable number of questions (4.11). Concerning the item characteristics, the EFL instructors noted that the tool utilized clear (4.35), concise (4.27), and easy-to-understand (4.17) language. Regarding content, the teachers believed that the tool provided correct assessment content (4.73) and up-to-date information (4.67), presented clear assessment topics (4.62), and aligned appropriately with the high school EFL curriculum outlined in the Basic Education Core Curriculum B.E. 2551 (4.56). They also agreed that the tool covered all topics comprehensively (4.42) and contained accurate content (4.42). In terms of usefulness, the teachers felt that the tool could aid in selecting quality English e-learning programs for their students (4.77) and provide clear assessment results that could be used to enhance the e-learning programs (4.75). Additionally, they anticipated that the e-learning evaluation tool could be effectively utilized to evaluate e-learning programs in line with the high school EFL curriculum (4.56).

Three open-ended questions were included in the questionnaire to gather additional comments, focusing on the EFL teachers' opinions about the e-learning evaluation tool. The results complemented the quantitative findings. The feedback

regarding the e-learning evaluation tool highlighted several key themes from data collected by the open-ended questions. 14.75% of the respondents suggested including evaluations of image quality, language, sound, and typography, while 12.30% recommended incorporating topics related to the teaching process in e-learning lessons. 9.83% indicated a need for diverse assessment methods for student learning outcomes, followed by 6.56% who mentioned the evaluation of music and narration quality in the program. Other suggestions included aligned tests (4.10%), efficiency in reporting test results (2.46%), learner and instructor participation (1.64%), and convenience for self-printing certificates (0.81%). In addition, 28.67% of the participants noted that the e-learning evaluation tool contained a large number of items and suggested that combining similar items could help reduce the total count.

The overall assessment of the e-learning evaluation tool was rated very highly, with a mean score of 4.46. The evaluation across the four dimensions of the tool revealed the following findings. Structure, layout, and design had a mean score of 4.40, rated as excellent. Quality of content achieved a mean score of 4.4, also rated as excellent. Functionality and system received a mean score of 4.21, rated as excellent. Moreover, support quality had a mean score of 4.30, rated as excellent. Therefore, the results demonstrated that the e-learning evaluation tool has high efficiency and robustness. The findings suggest that the tool could be effectively used to evaluate e-learning programs intended for the high school EFL curriculum that aligns with the Basic Education Core Curriculum B.E. 2551 (A.D. 2008).

5.2 Discussion of the Findings

5.2.1 Discussion of Research Question 1

What is the process for developing the e-learning evaluation tool?

The development of the e-learning evaluation tool was adapted from Al-Fraihat et al. (2020), Liu et al. (2011), and Ozkan et al. (2009). This process involved a systematic literature review, including the analysis and synthesis of research related to the development processes of e-learning evaluation tools. The process was divided into four steps: 1) Rationale, 2) Development, 3) Implementation, and 4) Evaluation, with each step focusing on enhancing the e-learning evaluation tool to ensure a clear, comprehensive, and standardized evaluation framework.

Phase 1. Rationale

The e-learning evaluation tool was developed by examining gaps in previous research and literature on e-learning development and evaluation. The framework of the e-learning evaluation tool was discussed with four experts in a focus group meeting via Microsoft Teams. Later, the e-learning evaluation framework was revised based on the experts' suggestions. In this phase, four main e-learning dimensions were identified: (1) structure, layout, and design, (2) quality of course content, (3) functionality and system, and (4) support quality. This framework served as a guideline for designing an e-learning evaluation tool that comprehensively covered the content required for e-learning assessment. Additionally, the evaluation framework was discussed with experts in various fields to ensure that it covered the relevant dimensions.

Phase 2. Development

The first draft of the e-learning evaluation tool was designed based on the revised framework. The e-learning evaluation tool was checked for content validity by five experts in educational technology, EFL teaching, measurement and assessment, and high school EFL curriculum. The IOC Indexes of the e-learning evaluation tool ranged from 0.8 to 1. After that, the e-learning evaluation tool was revised based on the experts' suggestions. Later, the e-learning evaluation tool was trialed with 50 EFL teachers in three schools of the Secondary Education Service Area Office Bangkok 2 to check the internal consistency. They utilized an e-learning evaluation tool to evaluate the e-learning programs they frequently used. The reliability of the tool was 0.94, considered highly reliable.

Phase 3. Implementation

The survey was conducted from May-June 2024. Copies of the e-learning evaluation tool and the questionnaire were sent to 122 EFL teachers at seven extra-large schools in the Secondary Education Service Area Office Pathumthani. They were asked to use the e-learning evaluation tool to evaluate the e-learning programs that they used to teach high school EFL curriculum developed by the Office of the Basic Education Commission. After that, the EFL teachers answered the questionnaire to rate their opinions on the e-learning evaluation tool. In this phase, feedback on the e-learning evaluation tool was collected from a larger group of participants, with the aim of further enhancing the e-learning evaluation tool.

Phase 4. Evaluation

In this phase, the data from the returned copies of the e-learning evaluation tool and questionnaire were analyzed to report means, standard deviations, and qualitative findings. The results from the data analysis provided guidance on areas where the tool should be rectified to ensure that it meets higher standards and can be applied to evaluate e-learning programs for EFL education comprehensively.

5.2.2 Discussion of Research Question 2

What dimensions and components should be included in the comprehensive e-learning evaluation tool for the high school EFL curriculum mandated by OBEC in Thailand?

The results of the development of a comprehensive e-learning evaluation tool, based on a literature review and expert suggestions, for the high school EFL curriculum as mandated by the Office of the Basic Education Commission (OBEC) under the Ministry of Education in Thailand, revealed that the e-learning evaluation tool has comprehensive dimensions and components for assessing e-learning programs intended to support the high school EFL curriculum. The e-learning evaluation tool includes four major dimensions: (1) structure, layout, and design, (2) quality of course content, (3) functionality and system, and (4) support quality. These dimensions and components can be delineated as follows:

(1) Structure, layout and design

There was a strong consensus among the participants regarding structure, layout, and design quality in e-learning programs. Key components in this dimension include the e-learning program's well-organized content structure, which delineates main and subtopics, allowing users to locate necessary information swiftly. Additionally, it should utilize appropriate font styles and sizes (approximately 10-20 points) to enhance readability, and carefully select background colors to contribute to the overall user experience. The e-learning program needs to feature visually appealing elements and maintain consistency in fonts, colors, buttons, and icons. Furthermore, it should be designed to be accessible for learners with disabilities, providing tools, such as screen readers and speech synthesizers. The program should operate efficiently across a variety of systems and be accessible online via computers, smartphones, and other devices.

Furthermore, the structure, layout, and design dimension of the e-learning program should also focus on content structure. The e-learning program should help learners understand the main topics and subtopics and conveniently find the content they need. The program should use font and text sizes that are easy to read, and have appropriate background colors. Attractive visuals can appeal to attention and image resolution can be adjusted to fit different screen sizes. These components are in line with the idea of Khlaisang (2010) who suggested a model of appropriate websites and courseware for e-learning in higher education that included factors, such as multimedia design, background, text, and graphic elements.

Moreover, the participants added that the e-learning program should consider learners with disabilities, and incorporate a screen reader program and speech synthesizer software. Essentially, the e-learning program should operate well on different systems and be available online and offline through computers, smartphones, and other electronic equipment. These components discussed in the present research are consistent with the findings of Alias et al. (2012), who emphasized the 10 factors of e-learning— ease of use, visual appeal, connectivity, structure and layout, information availability, reliability, efficiency, support, communication, and security— to ensure the success of e-learning.

(2) Quality of course content

The research findings highlight the significance of a high level of quality in the e-learning assessment related to English language content, specifically aligned with the Basic Education Core Curriculum B.E. 2551 (A.D. 2008) for Mathayom 4 to 6. The e-learning should comprehensively address components, including communication, culture, connections with other learning areas, and community engagement. The e-learning should effectively integrate English skills into tasks, ensuring that students can practice multiple skills in each activity. In addition, the content needs to be valid, appropriate for different learning levels, diverse, and engaging, with a structured progression from simple to complex topics.

Moreover, authentic learning materials and attractive multimedia are essential, alongside audio resources featuring various English accents. The program should support various listening and speaking skill development, offer a wide range of reading materials, and provide different writing formats to enhance writing skills. It should also

cover grammar rules and vocabulary expansion, assign post-lesson tasks, and offer flexible content and timing to cater to diverse learner needs. Additionally, the program should promote various learning styles and can be adapted to different teaching formats.

The relatively high number of questions in this section was evident because this research aimed to develop an e-learning assessment that encompasses components related to learning English at the high school level. Additionally, it aimed to ensure alignment between the assessment of the quality of course content and the fundamentals of the Basic Education Core Curriculum B.E. 2551 (A.D. 2008). The research findings indicated that the components of assessment related to e-learning content were comprehensive.

The quality of the course content dimension requires that the English contents of the e-learning program comply with the contents of the Basic Education Core Curriculum 2008 for Mathayom 4-6, comprising valid, suitable, diverse, engaging, authentic, and interesting English content, activities, and tasks that are organized well to support learning progress (Nalintippayawong et al., 2023; Phraesrisakul, 2023; Chulerk, 2023; Worapongphat, 2022; Munpru et al., 20022; Chobthamdee et al., 2022; Phongphiphat et al., 2022; Laksanasut, 2021; Worasuwanarak et al., 2021; Rumpanpetch, 2021; Uttamaphant, 2019; Lake, 2019). Essentially, the e-learning program for the high school EFL curriculum should include cultural content and relationships with other learning areas. The program should contain attractive and authentic multimedia, including audio of British, American, and international accents. As Chobthamdee and Langprayoon (2022) indicated, students achieved high scores in English speaking skills after learning through e-learning.

The contents and tasks should engage students in various listening and speaking skills, and it needs to provide reading materials, e.g. a range of texts, news, articles, literature, and academic essays to enhance student reading comprehension. Students should be invited to practice writing different types of text, including letters, essays, and reports. Studies by Limtasiri (2021), Phraesrisakul (2023), and Chulerk (2023) showed that the students demonstrated a notable improvement in their writing and reading skills after utilizing e-learning. In addition to English grammatical rules, vocabulary exercises, and assignments after learning are essential components. Importantly, the e-learning program needs to provide flexible content and flexible

timing for learning. E-learning should be constructed to support a variety of learning styles and teaching methods. The results are in congruence with a study of Khongtan et al. (2013) suggesting that e-learning is efficient for learning English vocabulary and students find it convenient to learn English vocabulary through e-learning.

(3) Functionality and system

The functionality and system dimension of the e-learning program should be robust. It should have a clear sitemap, navigation tools, a convenient search function, useful communication tools, a helpful FAQ, and useful help options, e.g. online dictionary, translation tools, and grammar-checking tools for learners. The e-learning program needs to operate efficiently, with good responsiveness and minimal issues related to frequent downtime or technical problems that might disrupt learners' activities. Security measures are vital to protecting user data and privacy, such as secure login, encryption of personal data, and password recovery. It is also important to have data backup and recovery to prevent data loss (Prempee, & Singto, 2023; Lake, 2019; Woottipong, 2016; Liu et al., 2010; Ozkan, & Koseler, 2009).

Key components should also include formative and summative assessment tools tailored to different difficulty levels, along with various types of exam questions that provide learners with immediate feedback on their performance and errors. The assessment tools integrated in e-learning need to be able to track current learning progress and schedules, while offering speech practice to evaluate oral skills with appropriate feedback, such as pronunciation corrections. A motivating reward system should encourage continuous engagement in English lessons. Communication tools, for instance, chat, forums, email, and video calls, have to facilitate interaction among learners and teachers. The platform must provide a clear sitemap, user-friendly navigation, a convenient search function, and helpful resources, such as online dictionaries and grammar checkers. Additionally, it has to include an FAQ section for common queries, operate efficiently with minimal technical issues, and implement security measures to protect user data. Finally, the e-learning program should offer data backup and recovery options to safeguard against system failures, ensuring uninterrupted learning activities.

The assessment results show that the e-learning evaluation tool developed in this study includes relevant assessment dimensions and components regarding the

functionality and system suggested by e- learning development theories and highlighted by many scholars (Prempee & Singto, 2023; Nalintippayawong et al., 2023; Chulerk, 2023; Al-Fraihat et al., 2020; Lake, 2019; Thipwongsa et al., 2014; Khlaisang, 2010; Liu et al., 2010; Ozkan & Koseler, 2009; Ratree & Petsangsri, 2006).

(4) Support quality

Previous research identified essential characteristics for support quality in e-learning, including the capacity to accommodate over 1,000 users, clear instructions for system usage, a support center for learner inquiries, live support services, such as email and chat, and mechanisms for collecting user feedback to assess satisfaction. Overall, the findings indicate that the e- learning assessment tool should comprehensively address evaluation topics, aligned well with the core components of e-learning and the English language learning content mandated by the high school core curriculum.

It is suggestible that the support quality dimension has the following components. The e-learning program should be able to accommodate a reasonable amount of users. In addition, the program needs to provide instructions on how to use the system, a support center for learners to ask or send their questions to system administrators, and live support services, such as email, chat, and calls, to assist learners with any issues they encounter while using the system. The findings are consistent with the research conducted by Nalintippayawong et al., (2023) which examined factors contributing to the success of e-learning, e.g. information quality, system quality, and stem use. In addition, the e-learning program should collect feedback from users to assess their satisfaction. This is consistent with the research of Nalintippayawong et al. (2023), Preasrisakul (2023), Chulerk (2023), Worapongphat (2022), Rumpanpetch (2021), and Uttamaphat (2019), who indicated that user satisfaction with e-learning and user suggestions can enhance the development and success of e-learning programs.

The findings also provide insights into areas where e-learning should be further developed, aligned with the ideas of Prempree and Singto (2023), who stated that the characteristics of supportive applications impact the success of learning through electronic media. Additional comments from EFL teachers suggested adding more topics and content to further develop the e-learning evaluation tool, including diverse methods of learning assessment and evaluation outcomes, the quality of music and

narration, appropriate test quantities aligned with the English lessons, reports on test results, learners and instructors participation in e-learning, and self-printing certificates through an online system. Furthermore, insights from the qualitative part highlighted additional components for assessing e-learning, including image quality, language, sound, typography, and diverse evaluating methods for learning outcomes.

In conclusion, the study obtained findings reflecting positive results on the e-learning evaluation tool. The e-learning evaluation tool is effective for assessing e-learning developed for the high school EFL curriculum in the Thai context. The overall results suggest positive opinions among EFL teachers regarding the excellence of the e-learning evaluation tool. Ultimately, the e-learning evaluation tool can help teachers select quality English e-learning programs suitable for the high school EFL curriculum.

5.2.3 Discussion of Research Question 3

What are the opinions of high school EFL teachers about the e-learning evaluation tool for the high school EFL curriculum?

The findings revealed that the e-learning evaluation tool received a rating of 4.46 with a standard deviation of 0.124, indicating a widespread consensus that it was highly effective. Additionally, the results reported a high reliability of 0.92 for the e-learning evaluation tool, tested with a significantly larger number of participants. This high-reliability value suggests that others can use the e-learning evaluation tool to assess their e-learning programs. Moreover, the results indicated that the e-learning evaluation tool can effectively assess e-learning for the high school EFl curriculum in Thailand and provide clear assessment results. Gi-Zen et al. (2010) reported that teachers using various teaching approaches should carefully select appropriate instructional materials. By utilizing the evaluation form, teachers can assess e-learning programs and integrate the most fitting ones into the EFL curriculum.

Furthermore, the opinions of 122 high school EFL teachers regarding the e-learning evaluation tool for the high school EFL curriculum were positive. They suggested additional components of e-learning assessment as follows: the quality of images, language, sound, and typography; assessing the teaching process and various methods of learning; evaluating learning outcomes; assessing the quality of music and narration used in e-learning; ensuring appropriate and aligned test quantities with the

lessons; ensuring the efficiency of reporting test results; and engaging learners and instructors in the development of e-learning. These components align with the factors for developing successful e-learning (Woottipong, 2016; Nalintipayawong et al., 2023).

Al-Fraihat et al. (2020) recommended that the different groups of e-learning stakeholders could enrich research with different points of view and provide a better understanding of the issues contributing to e-learning success. Therefore, studying teachers' opinions on the e-learning evaluation tool has provided the researcher with insights into more comprehensive perspectives.

Nevertheless, the participants commented that the number of questionnaire items is quite large. Thus, some items could be combined to reduce the total count, and the tool should use concise language. This suggestion is consistent with the recommendation by Seale et al. (2011), which proposed further study of questions and items with statistical correlations to reduce the number of questions and refine the assessment tool to be more concise. This method could provide directions for enhancing the efficiency and user-friendliness of the e-learning evaluation tool.

5.3 Implications of the Findings

The current research has developed a comprehensive e-learning evaluation tool and set a new standard for evaluating e-learning programs that support the high school EFL curriculum in Thailand. The e-learning evaluation tool can inform if the e-learning content aligns with the Basic Education Core Curriculum 2008 for Mathayom 4-6. The tool will help schools ensure that the e-learning programs are relevant and comprehensive, covering essential areas of the EFL curriculum. The results reported the high validity and reliability of the e-learning evaluation tool, indicated by the Cronbach reliability coefficient of 0.94 and the high ratings of EFL teachers. The tool can inform about the strengths and weaknesses of e-learning programs, allowing data-driven decisions to improve and enhance curriculums. Thus, other schools in different regions of the country could adopt this model and the tool to find high-quality e-learning programs.

Given the comprehensive evaluation and high effectiveness of the e-learning evaluation tool, there will be potential for the tool to be accepted and adopted nationwide. This could potentially result in a more uniform, complete, and high-quality

e-learning experience of English for high school students across regions in Thailand. The implications of this study highlight the potential contribution and impact of the developed e-learning evaluation tool on improving the quality, accessibility, efficiency, and effectiveness of high school English education through diverse e-learning digital platforms.

5.4 Limitations of the Study

Although the current study could provide a comprehensive framework for evaluating e-learning tools, particularly for the high school EFl curriculum of Basic Education Core Curriculum B.E. 2551 (A.D. 2008), several limitations should be taken into consideration and acknowledged. Since this study only included 122 EFL teachers purposively selected from seven extra-large schools within the Secondary Education Service Area Office Pathum Thani, this could limit the generalizability of the research findings to other regional areas in the country or smaller schools in the same province that may have different teaching and learning contexts or e-learning programs.

The strong reliance on participants' self-reported data from the questionnaire could possibly result in response biases. The qualitative data collected were limited to three open-ended questions. This may not be able to capture the instructors' perspectives in-depth and could not explore the complexity of their experiences and views concerning the invented e-learning evaluation tool. Even though the proposed e-learning evaluation tool has been reviewed by experts from diverse academic fields, this would require extensive pilot testing with a larger and more diverse group of stakeholders to strengthen the e-learning evaluation tool's reliability and validity (Saelea et al., 2011).

Admittedly, the present study focused merely on the opinions of 122 EFL teachers, excluding high school students' and school administrators' perspectives. The current study did not examine the technological obstacles or inequality in the digital realm among EFL teachers and students which could implicate their potential to evaluate the e-learning programs. Therefore, the results of the study might be representative only of this group (Liu et al., 2011). Different participants may have varied views and research results.

5.5 Recommendations for Further Studies

Future research on e-learning evaluation in similar contexts should include a more extensive and diverse range of high schools in the Kingdom of Thailand, incorporating smaller schools and rural schools in other regions and contexts, to solidify and heighten the generalizability of the research findings. A larger sample size could allow a more comprehensive and deep understanding of the proposed e-learning evaluation tool's effectiveness. Moreover, future studies should incorporate the perspectives of high school students, and school administrators, in addition to teachers. This would offer more insights and a holistic view of the e-learning evaluation tool's potential and aspects for improvement. In addition, different groups of stakeholders should be included as they could enrich the research with different points of view and provide a better understanding of the issues facing e-learning success (Al-Fraihat, et al., 2020).

Further investigations should employ more in-depth and extensive qualitative methods, such as observations, interviews, and focus groups with other stakeholder groups, to gather detailed and insightful feedback. This could reveal more nuanced insights and provide a fuller and richer understanding of e-learning experiences. In addition, a systematic mixed-method approach could help ensure a well-balanced deployment of qualitative and quantitative data. This could allow a more comprehensive analysis and a keen understanding of the empirical research findings.

5.6 Chapter Summary

This chapter provides a discussion and conclusions of the current study, aiming at the development of an e-learning evaluation tool for the high school EFL curriculum, as mandated by the Office of the Basic Education Commission (OBEC) in Thailand. The study also investigated the opinions of EFL teachers regarding the tool's effectiveness. Based on quantitative and supplementary qualitative analysis of responses from 122 EFL teachers in the Secondary Education Service Area Office Pathumthani, the study revealed the overall effectiveness of the e-learning evaluation tool.

The study followed a systematic procedure, integrating both quantitative and qualitative analyses to assess the tool's suitability and effectiveness for evaluating e-learning programs. The development process rigorously followed a four-phase structure: Rationale, Development, Implementation, and Evaluation. The e-learning evaluation tool consists of three parts: general background information, evaluation of English e-learning, and open-ended questions. The tool was developed with four core dimensions: (1) structure, layout, and design; (2) quality of course content; (3) functionality and system; and (4) support quality. Appendix E contains the revised version of the e-learning evaluation tool.

The structure, layout, and design dimension encompasses the components, such as well-organized content, appropriate typography, and accessible design. The quality of course content dimension includes components, for instance, alignment with curriculum standards, integration of multiple language skills, and engaging materials. The functionality and system dimension incorporates components, for example, clear navigation, assessment tools, security measures, and interactive elements. The support quality dimension focuses on components, namely the availability of technical support, live assistance, and mechanisms for feedback collection.

Essentially, the findings highlight the potential for nationwide adoption of the e-learning evaluation tool. Ensuring alignment with the Basic Education Core Curriculum, the tool can help schools select high-quality e-learning programs and identify areas for improvement. Its high validity and reliability make the tool a valuable instrument for evaluating digital learning platforms and enriching EFL learning experiences for students.

Nonetheless, certain limitations of the research and the tool should be acknowledged, since the study was conducted in specific schools in Pathumthani, limiting the generalizability of the findings to smaller or rural schools that may have different contexts. Moreover, the collected data relied on feedback from participants' self-reports, which may contain bias. The current study did not include perspectives from school administrators, or students, which could provide additional and diverse insights. Future studies in this research vein should expand the sample size by including schools from other regions in Thailand. Moreover, future research should investigate the perspectives of school administrators, students, and other stakeholders. Research should employ mixed-method approaches, such as interviews, focus groups, and

observations, to collect more nuanced insights, and further refine the e-learning evaluation to reduce redundancy.

In conclusion, this study has successfully developed a valid, reliable, and effective e-learning evaluation tool for high school EFL curriculum in Thailand. The tool was well-received by EFL teachers in the study, and overall it demonstrated strong efficiency in assessing e-learning programs. With further adjustments and broader implementation in similar situations, the e-learning evaluation tool has the potential to enrich students' digital learning experiences and support e-learning intended for high school EFL education nationwide.

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APPENDICES

APPENDIX A: A Revised Version of the E-Learning Evaluation Tool (English and Thai Versions)

E-Learning Evaluation Tool

for Thailand's National High School EFL Curriculum

This e-learning evaluation tool was developed to assess e-learning programs for the English as a Foreign Language (EFL) curriculum. The evaluation covers four key dimensions: (1) Structure, layout, and design, (2) Quality of course content, (3) Functionality and system, and (4) Support quality. This tool enables EFL teachers to evaluate e-learning programs effectively and select the most appropriate ones based on course content and student age.

This e-learning evaluation tool consists of three sections. The form is divided into three parts as follows:

Part 1: General information (5 items)

Part 2: Evaluation of the e-learning program (68 items)

- 2.1 Structure, layout and design (12 items)
- 2.2 Quality of course contents (29 items)
- 2.3 Functionality and system (22 items)
- 2.4 Support quality (5 items)

Part 3: Open-ended Questions (7 items)

The tool is designed the items in each topic. A five-point Likert rating scale is used to score the levels of agreement the evaluation for e-learning that supports the national high school EFL curriculum based on the Basic Education Core Curriculum 2008 for Mathayom 4 to 6 of foreign languages. The e-learning assessment levels are as follows: 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree.
*** The Basic Education Core Curriculum 2008 for Mathayom 4 to 6 of foreign languages is an educational curriculum for unity in national education. This curriculum is used for the learning standards and the goals for developing the students' knowledge, skills, attitudes, and morals. It consists of 4 main areas: language for communication, language and culture, language and relationship with other learning areas, and language and relationship with community and the world).

E-Learning Evaluation Tool for Thailand's National High School EFL Curriculum

Assessor's Name: .....

Date of Assessment: .....

Name of e-learning program .....

Part 1: The first part is about your general background information.

1. Gender
   - ☐ Male ☐ Female ☐ Other .....
2. Age
   - ☐ 21-30
   - ☐ 31-40
   - ☐ 41-50
   - ☐ 51-60
3. Educational Background
   - ☐ Bachelor degree in .....
   - ☐ Master's degree in .....
   - ☐ Doctoral Degree in .....
   - ☐ other: .....
4. EFL teaching experience
   - ☐ 1-2 years
   - ☐ 3-4 years
   - ☐ 5-6 years
   - ☐ 7-9 years
   - ☐ more than 10 years
5. Experience with the e-learning system for High School English Teaching
   - ☐ 1-2 years
   - ☐ 3-4 years
   - ☐ 5-6 years
   - ☐ 7-9 years
   - ☐ more than 10 years

Part 2: Please evaluate the structure, layout and design, quality of course contents, functionality and system and support quality of the English e-learning.

Items	Evaluation levels				
	5	4	3	2	1
2.1 Evaluation Criteria for the **structure, layout and design** of the English e-learning. (12 items)					
1. The e-learning program is designed with a suitable content structure.					
2. It helps learners understand the main topics and subtopics clearly.					
3. It allows learners to quickly find the content they need.					
4. It uses appropriate front and size text which are easy to read. (The appropriate text size approximately 10-20 points.)					
5. It uses appropriate background colors.					
6. It provides attractive visuals.					
7. It can adjust image resolution to fit different screen sizes clearly.					
8. It provides the quality of sound, music and narration used in the e-learning program.					
9. It provides various elements, such as fonts, colors, buttons, and icons, that are consistent throughout the program.					
10. It is designed to be accessible for learners with disabilities, such as screen reader programs and speech synthesizer software.					
11. It operates well on different kinds of systems.					
12. It is available online and offline through computers, smartphones, and other electronic equipment.					
Total					

Items	Evaluation levels				
	5	4	3	2	1
2.2 Evaluation Criteria for **quality of course contents** of the English e-learning program. (29 items)					
1. The English contents of the e-learning program cover the language for communication contents (strand 1) of the Basic Education Core Curriculum 2008 for Mathayom 4 to 6.					
2. The English contents of the e-learning program cover the language and culture contents (strand 2) of the Basic Education Core Curriculum 2008 for Mathayom 4 to 6.					
3. The English contents of the e-learning program covers the language and relationship with other learning areas (strand 3) of the Basic Education Core Curriculum 2008 for Mathayom 4 to 6.					
4. The English contents of the e-learning program cover the language and relationship with community and the world (strand 4) of the Basic Education Core Curriculum 2008 for Mathayom 4 to 6.					
5. The e-learning program integrates English skills into the tasks or activities so that students can practice one more skill in each task.					
6. It provides the valid contents. (E-Learning's content is factually accurate and up-to-date.)					
7. It provides the suitable contents for learners' learning levels. (E-Learning's content is graded from easy to difficult, according to the level of the learner.)					
8. It provides the diverse contents.					
9. It provides the engaging contents.					
10. It provides the interesting contents. (E-Learning's content is summarized the key points. It is easy to read and understand.)					

Items	Evaluation levels				
	5	4	3	2	1
11. It organizes the contents from simple to complex, in line with the high school EFL curriculum.					
12. It provides the authentic learning materials of daily English. (E-Learning's content provides materials that help learners gain the learning experience in the lesson such as TV shows, news segments, documentaries, movie clips and trailers, online videos, and commercials etc.)					
13. It provides attractive multimedia.					
14. It provides the authentic multimedia.					
15. It provides the audios of British, American and international accents.					
16. It provides contents and tasks to engage in various listening and speaking skills.					
17. It provides contents to motivate the students in various listening and speaking activities.					
18. It provides the reading materials include a range of texts, news, articles, literatures and academic essays to enhance student's reading comprehension.					
19. It provides the different types of writing contents, including letter, essay, and report to enhance student's writing skills.					
20. It provides English grammar rules and expansion vocabulary.					
21. It provides English vocabulary for students to study further.					
22. It provides the assignments after the students finish their lessons.					
23. It provides flexible contents for learners, allowing for the adjustment of materials and activities to meet their diverse needs.					

Items	Evaluation levels				
	5	4	3	2	1
24. It offers flexible timing, allowing learners to choose their study schedules according to their own preferences.					
25. It promotes a variety of learning styles for learners.					
26. It promotes the learners' learning methods.					
27. It can be adapted to various teaching formats and methods.					
28. It includes a teaching process that consists of an introduction, instruction, and conclusion.					
29. The e-learning program provides opportunities for learners and instructors to engage in learning within the e-learning environment.					
Total					
2.3 Evaluation Criteria for **functionality and system** of the English e-learning. (22 items)					
1. The e-learning program provides the formative assessment tools according to difficulty levels.					
2. It provides the summative assessment tools according to difficulty levels.					
3. It provides various types of exam questions, and it will reveal the related score or achievement level after learners have finished each test.					
4. It includes a variety of assessments that are appropriate for the learners and the content.					
5. It provides aligned content and assessments.					
6. It gives useful feedbacks after learners have finished taking tests, and exams.					
7. It shows their errors and explanations.					
8. It provides efficient reporting of assessment results.					
9. It shows current learning progress and inform the schedule to learners.					

Items	Evaluation levels				
	5	4	3	2	1
10. It provides helpful speech practice which can assess the learners' oral skills, and give suitable feedback, such as pronunciation correction for syllable and word stresses.					
11. It has a motivating reward system.					
12. It reinforces learners to continue learning English lessons.					
13. It provides useful communication tools, e.g. chat, forum, email, blog, video call for learners to interact with others.					
14. It provides a clear sitemap.					
15. It provides the navigation tools					
16. It provides a convenient search function.					
17. It provides a useful help options, e.g. online dictionary, translate tools, checking grammar tools for learner.					
18. The It provides a helpful FAQ (Frequently asked questions) for learners to find answers to common questions.					
19. It operates efficiently, with good responsiveness and minimal issues related to frequent downtime or technical problems that might disrupt learners' activities.					
20. It provides security measures to protect user data and privacy, such as secure login, encryption of personal data, and password recovery.					
21. It provides data backup and recovery to prevent data loss in case of a system failure, ensuring data restoration and reducing disruptions to learning activities					
22. It offers the convenience of self-printing certificates through an online system.					
Total					
2.4 Evaluation Criteria for **support quality** of the English e-learning. (5 items)					
1. The e-learning program can accommodate for reasonable amount of users. (more than 1,000 users)					
2. It provides instructions on how to use the system.					

Items	Evaluation levels				
	5	4	3	2	1
3. It provides support center for learners to ask or send their questions to system administrators.					
4. It offers live support services, such as email, chat, and calls, to assist learners with any issues they encounter while using the system.					
5. It collects feedback from users to assess their satisfaction.					
Total					

Part 3: Please answer the open-ended questions.

1. In your opinion, what enhancements could be implemented to improve the structure?

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2. In your opinion, what changes could be made to optimize the layout?

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3. In your opinion, what improvements could be made to enhance the design?

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4. In your opinion, what improvements could be made to enhance the quality of the course content?

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5. In your opinion, what additional feature or items would improve the program's functionally and system?

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6. In your opinion, how could the program's support quality be enhance?

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7. Please, give the other suggestions

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เครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์
หลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศระดับมัธยมศึกษา

เครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์นี้ได้รับการพัฒนาเพื่อประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศ การประเมินครอบคลุม 4 หัวข้อ ได้แก่ (1) โครงสร้าง รูปแบบ และการออกแบบ (2) คุณภาพเนื้อหาหลักสูตร (3) ฟังก์ชันการทำงานและระบบ (4) คุณภาพการสนับสนุน เครื่องมือนี้ช่วยให้ครูผู้สอนภาษาอังกฤษในฐานะภาษาต่างประเทศสามารถประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์ได้อย่างมีประสิทธิภาพ และเลือกสื่อที่เหมาะสมที่สุดตามเนื้อหาหลักสูตรและวัยของนักเรียน

โดยเครื่องมือประเมินสื่ออีเลิร์นนิงนี้ แบ่งออกเป็น 3 ส่วนดังนี้

ส่วนที่ 1: ข้อมูลพื้นฐานทั่วไปเกี่ยวกับผู้ประเมิน

ส่วนที่ 2: การประเมินสื่ออีเลิร์นนิงสำหรับหลักสูตรภาษาอังกฤษระดับมัธยมศึกษา ตามข้อกำหนดในหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561) (61 ข้อ) แบ่งเป็น 4 หัวข้อย่อย คือ

2.1 ด้านโครงสร้าง รูปแบบ และการออกแบบโปรแกรมสื่ออีเลิร์นนิง (12 ข้อ)
2.2 ด้านคุณภาพของเนื้อหาหลักสูตร (29 ข้อ)
2.3 ด้านการใช้งานและระบบ (22 ข้อ)
2.4 ด้านการให้บริการสำหรับการใช้งานของสื่ออีเลิร์นนิง (5 ข้อ)

ส่วนที่ 3: คำถามแสดงความคิดเห็น (7 ข้อ)

เครื่องมือนี้ใช้สำหรับการประเมินสื่ออีเลิร์นเพื่อการสนับสนุนการจัดการเรียนรู้สำหรับระดับชั้นมัธยมศึกษาหลักสูตรภาษาอังกฤษในประเทศไทย โดยสอดคล้องตามหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561) กลุ่มสาระการเรียนรู้ภาษาต่างประเทศ โดยแต่ละหัวข้อ มีระดับคะแนน (Likert scale) 5 คะแนน ดังนี้ 5 = มากที่สุด, 4 = มาก, 3 = ปานกลาง, 2 = น้อย, 1 = น้อยที่สุด

เครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์
หลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศระดับมัธยมศึกษา

ส่วนที่ 1: ข้อมูลพื้นฐานทั่วไปเกี่ยวกับผู้ประเมิน

ชื่อผู้ประเมิน: .....

วันที่ประเมิน:: .....

ชื่อโปรแกรมสื่ออีเลิร์นนิงที่ประเมิน : .....

1. เพศ

☐ ชาย ☐ หญิง ☐ อื่น ๆ .....

2. อายุ ☐ 21-30 ปี
☐ 31-40 ปี
☐ 41-50 ปี
☐ 51-60 ปี

3. การศึกษา

☐ ระดับปริญญาตรี สาขา .....
☐ ระดับปริญญาโท สาขา .....
☐ ระดับปริญญาเอก สาขา .....
☐ อื่น ๆ .....

4. ประสบการณ์การสอน

☐ 1-2 ปี
☐ 3-4 ปี
☐ 5-6 ปี
☐ 7-9 ปี
☐ มากกว่า 10 ปี

5. ประสบการณ์การใช้สื่อการเรียนรู้อิเล็กทรอนิกส์

☐ 1-2 ปี
☐ 3-4 ปี
☐ 5-6 ปี
☐ 7-9 ปี
☐ มากกว่า 10 ปี

ส่วนที่ 2: การประเมินสื่ออีเลิร์นนิงสำหรับหลักสูตรภาษาอังกฤษระดับมัธยมศึกษา ตามข้อกำหนดในหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561)

ข้อ	ระดับการประเมิน				
	5	4	3	2	1
2.1 การประเมินด้านโครงสร้าง รูปแบบ และการออกแบบโปรแกรมสื่ออีเลิร์นนิง (12 ข้อ)					
1. โปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์มีการออกแบบโครงสร้างเนื้อหาเหมาะสม					
2. ช่วยให้ผู้เรียนสามารถเข้าใจหัวข้อหลักและหัวย่อยอย่างชัดเจน					
3. สามารถค้นหาเนื้อหาที่ต้องการได้รวดเร็ว					
4. รูปแบบและขนาดตัวอักษรที่เหมาะสม (ประมาณ 10-20 พอยท์) ซึ่งทำให้อ่านข้อความได้ง่าย					
5. เลือกใช้สีพื้นหลังที่เหมาะสม ทำให้สามารถอ่านข้อความได้ง่าย					
6. มีภาพประกอบที่น่าสนใจ					
7. สามารถปรับความละเอียดของภาพให้เข้ากับขนาดหน้าจอที่แตกต่างกันได้อย่างชัดเจน					
8. เสียง ดนตรี และการบรรยายที่ใช้ในสื่อการเรียนรู้อิเล็กทรอนิกส์มีความชัดเจน					
9. มีองค์ประกอบต่าง ๆ เช่น แบบอักษร สี ปุ่ม และไอคอน ที่สอดคล้องกันทั้งโปรแกรม					
10. โปรแกรมสื่ออีเลิร์นนิงออกแบบให้ผู้เรียนที่มีความบกพร่องทางการเรียนรู้สามารถเข้าใช้งานได้ เช่น มีโปรแกรมอ่านหน้าจอ (screen readers) และ โปรแกรมสังเคราะห์เสียง (speech synthesizer)					
11. โปรแกรมสื่ออีเลิร์นนิงถูกออกแบบให้ทำงานได้ดีในระบบต่าง ๆ ผ่านทางคอมพิวเตอร์ สมาร์ทโฟน และอุปกรณ์อิเล็กทรอนิกส์อื่น ๆ					
12.โปรแกรมสื่ออีเลิร์นนิงสามารถใช้งานได้ดีทั้งในระบบออนไลน์หรือออฟไลน์					
รวม					

ข้อ	ระดับการประเมิน				
	5	4	3	2	1
2.2 การประเมินด้านคุณภาพของเนื้อหาของหลักสูตร (29 ข้อ)					
1. เนื้อหาภาษาอังกฤษของโปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์ครอบคลุมมาตรฐานการเรียนรู้และเนื้อหาภาษาอังกฤษ สาระ 1 ภาษาเพื่อการสื่อสาร หลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พ.ศ. 2551 (ฉบับแก้ไข พ.ศ. 2561) สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศ ระดับชั้นมัธยมศึกษา					
2. เนื้อหาภาษาอังกฤษในโปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์ครอบคลุมมาตรฐานการเรียนรู้สาระที่ 2 ภาษาและวัฒนธรรม ของหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พ.ศ. 2551 (ฉบับแก้ไข พ.ศ. 2561) สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศ ระดับชั้นมัธยมศึกษา					
3. เนื้อหาภาษาอังกฤษในโปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์ครอบคลุมมาตรฐานการเรียนรู้สาระที่ 3 ภาษาและความสัมพันธ์กับพื้นที่การเรียนรู้อื่น ๆ ของหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พ.ศ. 2551 (ฉบับแก้ไข พ.ศ. 2561) สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศ ระดับชั้นมัธยมศึกษาระดับชั้นมัธยมศึกษา					
4. เนื้อหาภาษาอังกฤษในโปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์ครอบคลุมมาตรฐานการเรียนรู้ สาระ 4 การเรียนรู้ภาษาและความสัมพันธ์กับชุมชนและโลก ของหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พ.ศ. 2551 (ฉบับแก้ไข พ.ศ. 2561) สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศ ระดับชั้นมัธยมศึกษาระดับชั้นมัธยมศึกษา					
5. โปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์มีการผสมผสานทักษะภาษาอังกฤษเข้ากับงานหรือกิจกรรมการเรียน เพื่อให้นักเรียนได้ฝึกฝนและพัฒนาทักษะภาษาอังกฤษเพิ่มเติมในแต่ละกิจกรรม					
6. เนื้อหาที่ถูกต้องตามความเป็นจริงและทันสมัยในปัจจุบัน					
7. มีการรายงานผลการประเมินอย่างมีประสิทธิภาพ					
8. เนื้อหาที่เหมาะสมกับระดับการเรียนรู้ของผู้เรียน					
9. เนื้อหาที่หลากหลายและน่าสนใจ					
10. เนื้อหาที่น่าสนใจ					

ข้อ	ระดับการประเมิน				
	5	4	3	2	1
11. เนื้อหาที่เข้าใจง่าย และมีการสรุปประเด็นสำคัญ					
12. จัดระดับเนื้อหาจากง่ายไปหายาก ที่สอดคล้องกับ หลักสูตรภาษาอังกฤษระดับชั้นมัธยมศึกษา					
13. โปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์มีสื่อการเรียนรู้ภาษาอังกฤษที่ใช้ในชีวิตประจำวัน เช่น รายการทีวี ข่าวสาร สารคดี คลิปภาพยนตร์ โฆษณา ฯลฯ ที่ช่วยให้ผู้เรียนได้รับประสบการณ์การเรียนรู้ในบทเรียน					
14. นำเสนอมัลติมีเดียที่น่าสนใจ					
15. นำเสนอมัลติมีเดียที่เสมือนจริง					
16. นำเสนอไฟล์เสียงสำเนียงอังกฤษที่หลากหลาย เช่น บริติช อเมริกัน และนานาชาติ					
17. เนื้อหาและกิจกรรมที่ผู้เรียนมีส่วนร่วมในกิจกรรมฝึกทักษะทางภาษา					
18. เนื้อหาที่จูงใจผู้เรียนในการร่วมทำกิจกรรมการฟังและการพูดต่าง ๆ					
19. สื่อส่งเสริมการอ่าน ประกอบด้วยข้อความ ข่าว บทความ วรรณกรรม และบทความทางวิชาการ ที่หลากหลายเพื่อพัฒนาทักษะการอ่านของผู้เรียน					
20. เนื้อหาเพื่อพัฒนาทักษะการเขียนประเภทต่าง ๆ เช่น การเขียนจดหมาย การเขียนเรียงความ และการเขียนรายงาน ที่สามารถประยุกต์ใช้ในชีวิตประจำวัน การเรียน หรือการทำงาน					
21. มีคำอธิบายหลักไวยากรณ์ภาษาอังกฤษ ให้ผู้เรียนได้ศึกษาเพิ่มเติม					
22. มีคำศัพท์ภาษาอังกฤษให้ผู้เรียนได้ศึกษาเพิ่มเติม					
22. ครูผู้สอนสามารถมอบหมายงานอื่น ๆ ให้ผู้เรียนทำหลังจากเรียนจบบทเรียนแล้ว เพื่อทบทวนและฝึกฝนทักษะทางภาษาเพิ่มเติม					
23. มีเนื้อหาที่ยืดหยุ่น โดยสามารถปรับเนื้อหาและกิจกรรมให้ตอบสนองความต้องการของผู้เรียนที่หลากหลาย					
24. มีเวลาที่ยืดหยุ่น โดยให้ผู้เรียนสามารถเลือกเรียนได้ตามความต้องการของตนเอง					
25. โปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์ส่งเสริมการเรียนรู้ของนักเรียนในระดับใด					
26. โปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์ส่งเสริมวิธีการเรียนรู้ที่หลากหลายของผู้เรียน					

ข้อ	ระดับการประเมิน				
	5	4	3	2	1
27. โปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์สามารถนำไปปรับใช้กับรูปแบบและวิธีการสอนที่หลากหลาย					
28. โปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์มีกระบวนการจัดการเรียนรู้ที่ประกอบไปด้วย การเกริ่นนำ การสอน และการสรุปเนื้อหาในบทเรียน					
29. โปรแกรมการเรียนรู้อิเล็กทรอนิกส์เปิดโอกาสให้ผู้เรียนและผู้สอนมีส่วนร่วมในการเรียนรู้ภายในสภาพแวดล้อมการเรียนรู้อิเล็กทรอนิกส์					
รวม					
2.3 การประเมินด้านการใช้งานและระบบ (22 ข้อ)					
1. โปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์มีเครื่องมือการประเมินผลย่อย (Formative assessment tools) ระหว่างเรียน ตามระดับการเรียนรู้					
2. มีเครื่องมือการประเมินผลสรุปหลังเรียน (Summative assessment tools) เรียงตามระดับการเรียนรู้					
3. มีแบบทดสอบที่หลากหลาย และสามารถแสดงผลคะแนน หรือระดับผลการทดสอบหลังการทำแบบทดสอบ					
4. มีรูปแบบการประเมินที่หลากหลายและเหมาะสมกับผู้เรียนและเนื้อหา					
5. มีเนื้อหาในบทเรียนและการประเมินที่สอดคล้องกัน					
6. ให้ข้อเสนอแนะที่มีประโยชน์ต่อผู้เรียนหลังจากการทำแบบทดสอบ โดยแสดงข้อที่ถูกหรือข้อที่ผิด และมีคำอธิบายให้ผู้เรียนเข้าใจ					
7. มีคำอธิบายคำตอบที่ถูกและคำตอบที่ผิดให้ผู้เรียนเข้าใจ					
8. มีการรายงานผลการประเมินอย่างมีประสิทธิภาพ					
9. โปรแกรมสื่ออีเลิร์นนิงมีการแสดงแถบความก้าวหน้าในการเรียนรู้ และแสดงผลการเรียนต่าง ๆ ที่บันทึกไว้ในระบบ ให้ผู้เรียนและครูผู้สอนทราบ					
10มีกิจกรรมการฝึกทักษะทางภาษาที่เป็นประโยชน์ต่อผู้เรียน ซึ่งสามารถประเมินทักษะการพูดของผู้เรียนและให้ข้อเสนอแนะ เช่น การแก้ไขการออกเสียงพยางค์(word stress) และการเน้นคำ (intonation)					
11. มีระบบการให้รางวัล (rewards) อย่างเหมาะสมแก่ผู้เรียน เพื่อจูงใจผู้เรียน					
12. มีการส่งเสริมให้ผู้เรียนนั้น เรียนบทเรียนภาษาอังกฤษต่อไป					

ข้อ	ระดับการประเมิน				
	5	4	3	2	1
13. มีเครื่องมือสื่อสาร (communication tools) ที่เป็นประโยชน์ เช่น แชท ฟอรัม อีเมล บล็อก วิดีโอคอล เพื่อให้ผู้เรียนติดต่อสื่อสารกับผู้อื่นและครูผู้สอนได้					
14. มีแผนผังเว็บไซต์ (sitemap) ที่ชัดเจน					
15. มีเครื่องมือนำทาง (navigating tools) ที่มีประสิทธิภาพ					
16. มีระบบการค้นหาข้อมูล (search engine) ที่สะดวกและมีประสิทธิภาพ					
17. มีตัวเลือกในการขอความช่วยเหลือที่เป็นประโยชน์สำหรับผู้เรียน เช่น พจนานุกรมออนไลน์ เครื่องมือแปลภาษา เครื่องมือตรวจไวยากรณ์					
18. มีการเตรียมคำตอบสำหรับคำถามที่พบบ่อย (Frequently asked questions and answers/FAOs) ที่เป็นประโยชน์ เพื่อให้ผู้เรียนได้ค้นหาคำตอบสำหรับคำถามทั่วไป					
19. ทำงานอย่างมีประสิทธิภาพ และมีการตอบสนองได้ดี ไม่ประสบปัญหาการหยุดทำงานบ่อยครั้ง หรือขัดข้องทางเทคนิคที่ขัดขวางการทำกิจกรรมการเรียนรู้ของผู้เรียน					
20. มีมาตรการรักษาความปลอดภัยเพื่อปกป้องข้อมูลผู้ใช้และรักษาความเป็นส่วนตัว เช่น การเข้าสู่ระบบที่ปลอดภัย การเข้ารหัสข้อมูลที่เป็นส่วนตัว การกู้คืนรหัสผ่าน					
21. มีการสำรองและกู้คืนข้อมูลเพื่อป้องกันข้อมูลสูญหายในกรณีที่ระบบล้มเหลว เพื่อกู้คืนการทำงาน และลดการหยุดชะงักของกิจกรรมการเรียนรู้					
22. มีความสะดวกในการพิมพ์ใบรับรองด้วยตนเองผ่านระบบออนไลน์					
รวม					
2.4 การประเมินด้านการให้บริการสำหรับการใช้งานของสื่ออีเลิร์นนิง (5 ข้อ)					
1. โปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์สามารถรองรับผู้ใช้งาน (user support) พร้อมกันได้จำนวนมาก (ผู้ใช้มากกว่า 1,000 ราย) ได้อย่างมีประสิทธิภาพโดยไม่ประสบปัญหาประสิทธิภาพการใช้งานลดลงหรือช้าลง					
2. มีการให้คำแนะนำการใช้งานระบบหรือคู่มือการใช้งาน (user manual) ที่ชัดเจน					

ข้อ	ระดับการประเมิน				
	5	4	3	2	1
3. มีศูนย์สนับสนุนสำหรับผู้เรียน (technical support center) เพื่อให้ผู้เรียนสามารถสอบถาม หรือส่งคำถามไปยังผู้ดูแลระบบ					
4. มีการให้บริการตอบคำถามแบบสด (Live Support) เช่น อีเมล แชท หรือทางโทรศัพท์ ในกรณีที่ผู้เรียนเกิดปัญหาในการใช้งานระบบ					
5. มีการเก็บรวบรวมความคิดเห็นจากผู้ใช้โปรแกรมเพื่อศึกษาความพึงพอใจของผู้ใช้					
รวม					

ส่วนที่ 3: กรุณาแสดงความคิดเห็นเพิ่มเติมเกี่ยวกับการประเมินสื่ออิเล็กทรอนิกส์สำหรับหลักสูตรภาษาอังกฤษ ระดับชั้นมัธยมศึกษา

1. ด้านโครงสร้างของสื่อการเรียนรู้อิเล็กทรอนิกส์สำหรับหลักสูตรภาษาอังกฤษระดับมัธยมศึกษา

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2. ด้านรูปแบบของสื่อการเรียนรู้อิเล็กทรอนิกส์สำหรับหลักสูตรภาษาอังกฤษระดับมัธยมศึกษา

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3. ด้านการออกแบบของสื่อการเรียนรู้อิเล็กทรอนิกส์สำหรับหลักสูตรภาษาอังกฤษระดับมัธยมศึกษา

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4. ด้านคุณภาพของเนื้อหาของสื่อการเรียนรู้อิเล็กทรอนิกส์สำหรับหลักสูตรภาษาอังกฤษระดับมัธยมศึกษาตอนปลาย

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5. ด้านการใช้งานและระบบของสื่อการเรียนรู้อิเล็กทรอนิกส์สำหรับหลักสูตรภาษาอังกฤษระดับมัธยมศึกษาตอนปลาย

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6. ด้านการให้บริการสำหรับการใช้งานของสื่อการเรียนรู้อิเล็กทรอนิกส์สำหรับหลักสูตรภาษาอังกฤษระดับมัธยมศึกษา

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7. โปรดกรุณาให้ข้อเสนอแนะอื่น ๆ เพิ่มเติม

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APPENDIX B: A Survey Questionnaire in English

(English and Thai versions)

Questionnaire

For users of the E-Learning evaluation tool for high school EFL curriculum.

The purposes of this questionnaire are to ask for users' opinions of the e-learning evaluation tool that the researcher developed a comprehensive e-learning assessment for high school EFL curriculum and to study the opinions of EFL teachers using the e-learning evaluation tool for the national high school EFL curriculum.

This questionnaire consists of three sections. The form is divided into three parts as follows:

Part 1: General information (5 items)

Part 2: Questions for users' opinions of the e-learning evaluation tool (20 items)

Part 3: Open-ended Questions (3 items)

This questionnaire is designed the items for asking the users' opinions of the e-learning evaluation tool for high school EFL curriculum that based on the Basic Education Core Curriculum 2008 for Mathayom 4 to 6. The questionnaire assessment levels (Likert scale) are as follows:

5 = Excellent

4 = Good

3 = Neutral

2 = Fair

1 = Improve

Questionnaire

For users of the e-learning evaluation tool for high school EFL curriculum.

Part 1: Please fill in the general background information.

1. Gender

   ☐ Male ☐ Female ☐ other.....

2. Age ☐ 21-30

   ☐ 31-40

   ☐ 41-50

   ☐ 51-60

3. Educational background

   ☐ Bachelor degree in .....

   ☐ Master's degree in .....

   ☐ Doctoral Degree in .....

   ☐ other: .....

4. EFL teaching experience

   ☐ 1-2 years

   ☐ 3-4 years

   ☐ 5-6 years

   ☐ 7-9 years

   ☐ more than 10 years

5. I have used e-learning materials for teaching at least.

   ☐ 1-2 years

   ☐ 3-4 years

   ☐ 5-6 years

   ☐ more than 7 years

Part 2: Please evaluate the E-Learning Evaluation Tool for Thailand's National High School EFL Curriculum.

Item	Level				
	5	4	3	2	1
1. The e-learning evaluation tool includes instructions to explain the purpose of the evaluation.					
2. It tool has the correct assessment contents.					
3. It contains content that is appropriate and aligned with the high school EFL curriculum based on the Basic Education Core Curriculum B.E. 2551 (A.D.2008).					
4. It has the complete contents that cover all topics.					
5. It contains accurate content items.					
6. It is divided into the appropriate assessment topics.					
7. It provides an appropriate sequencing of the assessment content.					
8. It provides a complete structure, layout and design contents.					
9. It provides complete contents to assess the quality of the English e-learning program.					
10. It provides the complete functionality and system contents.					
11. It provides the complete support quality contents.					
12. It uses concise, clear, and easy- to- understand language.					
13. It uses clear language.					
14. It uses easy-to-understand language.					
15. It provides up-to-date an assessment contents.					
16. It has a reasonable number of questions.					
17. It can be practically used for evaluating an e-learning program for high school EFL curriculum with the Basic Education Core Curriculum. B.E. 2551 (A.D. 2008)					

Item	Level				
	5	4	3	2	1
18. It can be applied to evaluate e-learning programs for the high school EFL curriculum based on the Basic Education Core Curriculum B.E. 2551 (A.D. 2008).					
19. It provides clear assessment results and can be used to further develop an e-learning program.					
20. It can help teachers select quality English e-learning programs that are suitable for their students.					
Total					
Overall					

Part 3: Please answer feedback questions on using the e-learning evaluation tool for high school EFL curriculum.

1. What additions should the e-learning evaluation tool make to any of the assessment topics?

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2. What additional content should the eLearning evaluation tool incorporate into the assessment?

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3. Please give other suggestions.

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แบบสอบถามความคิดเห็นต่อเครื่องมือประเมินสื่อการเรียนร็อิเล็กทรอนิกส์
สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศระดับมัธยมศึกษา
ตามหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561)

แบบสอบถามนี้มีวัตถุประสงค์ เพื่อสอบถามความคิดเห็นเกี่ยวกับการใช้เครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์ที่ผู้วิจัยได้ทำการพัฒนาเพื่อให้ครอบคลุมหัวข้อในการประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศระดับมัธยมศึกษา และเพื่อศึกษาความคิดเห็นของครูที่สอนภาษาอังกฤษในประเทศที่ใช้ภาษาอังกฤษเป็นภาษาต่างประเทศ (English as a foreign language/EFL) ในการใช้เครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์ฯ โดยแบบสอบถามฉบับนี้ แบ่งออกเป็น 3 ส่วน คือ

ส่วนที่ 1: ข้อมูลพื้นฐานทั่วไป (5 ข้อ)

ส่วนที่ 2: แบบสอบถามความคิดเห็นต่อเครื่องมือประเมินสื่ออีเลิร์นนิงสำหรับหลักสูตรภาษาอังกฤษระดับมัธยมปลายตามหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561) (20 ข้อ)

ส่วนที่ 3: คำถามแสดงความคิดเห็น (3 ข้อ)

แบบสอบถามนี้สำหรับสอบถามความคิดเห็นของผู้ที่ใช้เครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์โดยสอดคล้องตามหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561) กลุ่มสาระการเรียนรู้ภาษาต่างประเทศ โดยแต่ละหัวข้อจะมีระดับคะแนน (Likert scale) 5 คะแนน มีดังนี้

5 = มากที่สุด
4 = มาก
3 = ปานกลาง
2 = น้อย
1 = น้อยที่สุด

แบบสอบถามความคิดเห็นต่อเครื่องมือประเมินสื่อการเรียนร็อิเล็กทรอนิกส์
สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศระดับมัธยมศึกษา
ตามหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561)

ส่วนที่ 1: กรุณากรอกข้อมูลพื้นฐานทั่วไป

1. เพศ
   - ☐ ชาย ☐ หญิง
2. อายุ
   - ☐ 21-30 ปี
   - ☐ 31-40 ปี
   - ☐ 41-50 ปี
   - ☐ 51-60 ปี
3. ระดับการศึกษาสูงสุด
   - ☐ ปริญญาตรี สาขา .....
   - ☐ ปริญญาโท สาขา .....
   - ☐ ปริญญาเอก สาขา .....
   - ☐ อื่น ๆ : .....
4. ประสบการณ์ในการสอนภาษาอังกฤษ
   - ☐ 1-2 ปี
   - ☐ 3-4 ปี
   - ☐ 5-6 ปี
   - ☐ 7-9 ปี
   - ☐ มากกว่า 10 ปี
5. ข้าพเจ้าได้ใช้สื่ออีเลิร์นนิงสำหรับสอนอย่างน้อย
   - ☐ 1-2 ปี
   - ☐ 3-4 ปี
   - ☐ 5-6 ปี
   - ☐ มากกว่า 7 ปี

ส่วนที่ 2: กรุณากรอกแบบสอบถามความคิดเห็นต่อเครื่องมือประเมินสื่อการเรียนร็อิเล็กทรอนิกส์ สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศระดับมัธยมศึกษา ตามหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561)

ข้อ	ระดับการประเมิน				
	5	4	3	2	1
1. เครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์มีคำอธิบายวัตถุประสงค์ของการประเมินสื่อการเรียนรู้อิเล็กทรนิกส์					
2. โครงสร้างเนื้อหาการประเมินสอดคล้องกับหลักการการออกแบบบทเรียนประเภทสื่อการเรียนรู้อิเล็กทรนิกส์					
3. เนื้อหาที่มีความสอดคล้องและเหมาะสมกับหลักสูตรภาษาอังกฤษระดับมัธยมปลายตามหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561)					
4. เนื้อหาในการประเมินได้อย่างครบถ้วนและครอบคลุม					
5. เนื้อหาการประเมินถูกต้อง					
6. การแบ่งหัวข้อในการประเมินได้อย่างเหมาะสม					
7. การจัดลำดับของเนื้อหาในการประเมินได้อย่างเหมาะสม					
8. เนื้อหาในการประเมินด้านโครงสร้าง รูปแบบ และการออกแบบสื่อการเรียนรู้อิเล็กทรนิกส์ภาษาอังกฤษ ที่ครบถ้วนและครอบคลุม					
9. เนื้อหาในการประเมินด้านคุณภาพของเนื้อหาหลักสูตรของโปรแกรมสื่อการเรียนรู้อิเล็กทรอนิกส์ภาษาอังกฤษที่ครบถ้วนและครอบคลุม					
10. เนื้อหาในการประเมินด้านการใช้งานและระบบของสื่อการเรียนรู้อิเล็กทรนิกส์ภาษาอังกฤษที่ครบถ้วนและครอบคลุม					
11. เนื้อหาในการประเมินด้านคุณภาพการสนับสนุนการใช้งานที่ครบถ้วนและครอบคลุม					
12. ใช้ภาษาที่กระชับ					
13. ใช้ภาษาที่ชัดเจน					
14. ใช้ภาษาที่เข้าใจง่าย					
15. เนื้อหาในการประเมินที่มีความทันสมัยและเป็นปัจจุบัน					
16. เครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรนิกส์มีจำนวนข้อคำถามที่เหมาะสม					

ข้อ	ระดับการประเมิน				
	5	4	3	2	1
17.สามารถนำไปใช้ประโยชน์ได้จริงในการประเมินสื่อการเรียนรู้อิเล็กทรนิกส์สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศระดับมัธยมศึกษาตามหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561)					
18. สามารถนำไปประยุกต์ใช้ในการประเมิน สื่อการเรียนรู้อิเล็กทรนิกส์สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศระดับมัธยมศึกษาตามหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561))					
19. ผลการประเมินที่ชัดเจน และสามารถนำผลการประเมินไปใช้ในการพัฒนาสื่อการเรียนรู้อิเล็กทรนิกส์สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศระดับมัธยมศึกษาตามหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561) ต่อไปได้					
20. สามารถช่วยผู้สอนในการเลือกสื่อการเรียนรู้อิเล็กทรนิกส์ที่มีคุณภาพและเหมาะสมกับผู้เรียน สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศระดับมัธยมศึกษาตามหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561)					
รวม					

ส่วนที่ 3 : คำถามแสดงความคิดเห็น (3 ข้อ)

1. เครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศระดับมัธยมศึกษาตามหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561) ควรเพิ่มเติมอะไรเกี่ยวกับหัวข้อใดในการประเมิน

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2. เครื่องมือประเมินสื่อการเรียนรู้อิเล็กทรอนิกส์สำหรับหลักสูตรภาษาอังกฤษในฐานะภาษาต่างประเทศระดับมัธยมศึกษาตามหลักสูตรแกนกลางการศึกษาขั้นพื้นฐาน พุทธศักราช 2551 (ฉบับแก้ไข พ.ศ. 2561) ควรเพิ่มเติมอะไรเกี่ยวกับเนื้อหาในการประเมิน

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3. โปรดกรุณาให้ข้อเสนอแนะอื่น ๆ เพิ่มเติม

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APPENDIX C

Results of E-Learning Evaluation for the High School EFL Curriculum

Items			
2.1 Structure, Layout, and Design of the English E-Learning	**Mean value**	**Standard Deviation**	**Interpretation**
1. The e-learning program is designed with a suitable content structure.	4.61	0.489	Strongly Agree
2. It helps learners understand the main topics and subtopics clearly.	4.52	0.518	Strongly Agree
3. It allows learners to find the content they need quickly.	4.35	0.691	Strongly Agree
4. It uses the appropriate font and text sizes which are easy to read. (The appropriate text size is approximately 10-20 points.)	4.33	0.521	Strongly Agree
5. It uses appropriate background colors.	4.40	0.688	Strongly Agree
6. It provides attractive visuals.	4.34	0.701	Strongly Agree
7. It can adjust image resolution to fit different screen sizes.	4.29	0.610	Strongly Agree
8. It provides various elements, such as fonts, colors, buttons, and icons, that are consistent throughout the program.	4.32	0.534	Strongly Agree
9. It is designed to be accessible for learners with disabilities, such as screen reader programs and speech synthesizer software.	3.07	0.729	Neutral
10. It operates well on different kinds of systems.	4.52	0.578	Strongly Agree
11. It is available online and offline through computers, smartphones, and other electronic equipment.	4.31	0.547	Strongly Agree
Total	4.28	0.414	Strongly Agree

2.2 Quality of Course Contents of the English E-Learning Program	Mean value	Standard Deviation	Interpretation
1. The English contents of the e-learning program cover the language for communication contents of the Basic Education Core Curriculum 2008 for Mathayom 4-6.	3.93	0.835	Agree
2. The English contents of the e-learning program cover the language and culture contents of the Basic Education Core Curriculum 2008 for Mathayom 4-6.	3.97	0.655	Agree
3. The English contents of the e-learning program cover the language and relationship with other learning areas of the Basic Education Core Curriculum 2008 for Mathayom 4-6.	4.29	0.777	Strongly Agree
4. The English contents of the e-learning program cover the language and relationship with the community and the world of the Basic Education Core Curriculum 2008 for Mathayom 4-6.	4.21	0.620	Strongly Agree
5. It integrates English skills into the tasks or activities so that students can practice one more skill in each task.	4.36	0.728	Strongly Agree
6. The e-learning program provides the valid content. (e-learning's content is factually accurate and up-to-date.)	4.51	0.518	Strongly Agree
7. It provides suitable content for learners' learning levels. (e-learning's content is graded from easy to difficult, according to the level of the learner.)	4.59	0.557	Strongly Agree
8. It provides diverse content.	4.58	0.528	Strongly Agree
9. It provides engaging content.	4.39	0.523	Strongly Agree
10. It provides interesting contents. (E-earning's content is summarized the key points. It is easy to read and understand.)	4.43	0.559	Strongly Agree

Items			
11. It organizes the contents from simple to complex, in line with the high school English curriculum.	3.39	0.595	Neutral
12. It provides authentic learning materials of daily English. (e-learning's content provides materials that help learners gain the learning experience in the lesson such as TV shows, news segments, documentaries, movie clips and trailers, online videos, commercials, etc.)	4.31	0.772	Strongly Agree
13. It provides attractive multimedia.	4.51	0.549	Strongly Agree
14. It provides authentic multimedia.	3.78	0.787	Strongly Agree
15. It provides audio of British, American, and international accents.	4.45	0.500	Strongly Agree
16. It provides contents and tasks to engage in various listening and speaking skills.	3.93	0.835	Agree
17. It provides the contents to motivate the students in various listening and speaking activities.	4.26	0.495	Strongly Agree
18. It provides reading materials, including a range of texts, news, articles, literature, and academic essays to enhance student reading comprehension.	4.34	0.491	Strongly Agree
19. It provides different types of writing content, including letters, essays, and reports to enhance student's writing skills.	3.32	0.753	Neutral
20. It provides English grammar rules and vocabulary expansion.	4.45	0.547	Strongly Agree
21. It provides English vocabulary for students to study further.	4.47	0.563	Strongly Agree
22. It provides assignments after students finish their lessons.	4.37	0.517	Strongly Agree

Items			
23. It provides flexible content for learners, allowing for the adjustment of materials and activities to meet their diverse needs.	4.56	0.576	Strongly Agree
24. It offers flexible timing, allowing learners to choose their study schedules according to their preferences.	4.36	0.515	Strongly Agree
25. It promotes a variety of learning styles for learners.	4.41	0.542	Strongly Agree
26. It promotes the learners' learning methods.	4.48	0.501	Strongly Agree
27. It can be adapted to various teaching formats and methods.	4.52	0.502	Strongly Agree
Total	4.32	0.343	Strongly Agree
2.3 Functionality and System of English E-Learning.	**Mean value**	**Standard Deviation**	**Interpretation**
1. The e- learning program provides formative assessment tools according to difficulty levels.	3.56	0.761	Agree
2. It provides summative assessment tools according to difficulty levels.	4.25	0.742	Strongly Agree
3. It provides various types of exam questions, and it will reveal the related score or achievement level after learners have finished each test.	4.27	0.630	Strongly Agree
4. It gives useful feedback after learners have finished taking tests, and exams.	3.93	0.779	Agree
5. It shows their errors and explanations.	3.87	0.655	Agree
6. It shows current learning progress and informs the schedule to learners.	4.30	0.641	Strongly Agree
7. It provides helpful speech practice which can assess the learners' oral skills, and give suitable feedback, such as pronunciation correction for syllable and word stresses.	4.46	0.645	Strongly Agree

Items			
8. It has a motivating reward system.	4.31	0.562	Strongly Agree
9. It reinforces learners to continue learning English lessons.	4.70	0.458	Strongly Agree
10. It provides useful communication tools, e.g. chat, forum, email, blog, and video call for learners to interact with others.	4.73	0.499	Strongly Agree
11. It provides a clear sitemap.	4.57	0.497	Strongly Agree
12. It provides the navigation tools	4.61	0.489	Strongly Agree
13. It provides a convenient search function.	4.57	0.545	Strongly Agree
14. It provides useful help options, e.g. online dictionary, translation tools, and checking grammar tools for learners.	3.21	0.884	Neutral
15. It provides a helpful FAQ (Frequently asked questions) for learners to find answers to common questions.	4.63	0.533	Strongly Agree
16. It operates efficiently, with good responsiveness and minimal issues related to frequent downtime or technical problems that might disrupt learners' activities.	4.51	0.593	Strongly Agree
17. It provides security measures to protect user data and privacy, such as secure login, encryption of personal data, and password recovery.	4.52	0.564	Strongly Agree
18. It provides data backup and recovery to prevent data loss.	4.41	0.627	Strongly Agree
Total	4.43	0.423	Strongly Agree

Items			
2.4 Support Quality of the English E-Learning.	**Mean value**	**Standard Deviation**	**Interpretation**
1. The e-learning program can accommodate a reasonable number of users. (more than 1,000 users)	4.81	0.433	Strongly Agree
2. It provides instructions on how to use the system.	4.61	0.569	Strongly Agree
3. It provides a support center for learners to ask.	4.64	0.617	Strongly Agree
4. It offers live support services, such as email, and chat.	4.53	0.606	Strongly Agree
5. It collects feedback from users to assess their satisfaction.	4.56	0.669	Strongly Agree
Total	4.63	0.110	Strongly Agree
Overall	**4.31**	**0.366**	Strongly Agree

Additional Opinions of EFL Teachers Regarding E-Learning Evaluation Tool

Question 1: In your opinion, what enhancements could be implemented to improve the structure?			
No.	**Theme**	**Frequency**	**Percent**
-	No comment	-	-

Question 2: In your opinion, what changes could be made to optimize the layout?			
No.	**Theme**	**Frequency**	**Percent**
-	No comment	-	-

Question 3: In your opinion, what improvements could be made to enhance the design?			
No.	**Theme**	**Frequency**	**Percent**
-	No comment	-	-

Question 4: In your opinion, what improvements could be made to enhance the quality of the course content?			
No.	**Theme**	**Frequency**	**Percent**
1	The content at each grade level should be organized from simple to complex content and topics.	13	10.66
2	The content related to writing is limited; there should be additional material for practicing writing skills.	5	4.10
3	The program should include additional English content related to news or current events in the curriculum	1	0.82
Question 5: In your opinion, what additional feature or items would improve the program's functionally and system?			
No.	**Theme**	**Frequency**	**Percent**
1	The test should include additional explanations.	6	4.92
2	The program should have a vocabulary search bar that allows learners to easily find words' meanings.	2	1.64
Question 6: In your opinion, how could the program's support quality be enhance?			
No.	**Theme**	**Frequency**	**Percent**
-	No comment	-	-
Question7: Please, give other suggestions			
No.	**Theme**	**Frequency**	**Percent**
-	No comment	-	-

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