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The Development and Assessment of Electronic-Based English Proficiency Testing System for Tertiary-Level Students

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Abstract: The objectives of this study are to develop and assess the usability of electronic-based English proficiency testing system for tertiary-level students. There were 355 freshmen students selected as the sample group and clustered random sampling was applied. The quantitative data were collected using a five-point Likert scale questionnaire and an electronic-based English Proficiency Test using MOODLE. The qualitative data were collected by conducting a focus group interview. Three sessions of pilot tests were carried out for the validity and reliability of the instruments. The results revealed that the students in a sample group rated all of the items on the questionnaire in a high level of agreement with the total mean ($\bar{x}$) score of 4.27 and SD of 0.27. The results of qualitative data analysis showed that students preferred electronic-based tests in terms of system use, learning impact, user opinions, and test design. In comparison to traditional paper-based tests, the usability experience of students preferred the electronic-based test because it was convenient, saved time, and resource management efficient with security, prompt feedback, and less pressure.

Keywords: Electronic-based test, Language assessment, English proficiency test

Introduction

Electronic-Based assessment testing (e-exam or e-testing), also referred to as computer-based testing, is testing conducted by using a personal computer or any equivalent electronic device. It is one of the alternative assessments that uses either local or web-based technologies to deliver exams and evaluations onscreen. This type of test can be used for summative or formative assessment (Sewell, et al, 2010). E-testing may also include variations that may not be easily replicated on paper, such as video or audio clips, and animated quizzes.

At present, there are a number of influences on current thinking related to e-testing. As Daflizar et al. (2022) has stated, an increased interest in a learner-centered approach to language teaching, coupled with the progressive use of the technology-based approaches during the COVID-19 pandemic, emphasizes the active roles of learners in their learning and strategies used in learning a new language. Moreover, the fast advancement of Information and Communication Technology (ICT) in education is shifting the paradigm from paper-and-pencil-based to computer-based assessment system. Technology-based assessments appear to provide a wide variety of opportunities to measure or assess more complex bodies of knowledge, which were impossible to measure through traditional assessment methods. Conole and Warburton (2005) ascertained that computerized-adaptive testing items tested particular levels of ability and to deliver more accurate and reliable results than traditional tests.

Therefore, this study was designed to provide vital information on developing an electronic-based English proficiency test via Moodle and to assess its usability. It was hopeful that this research would shed some light on an alternative method of testing, which met the needs of the users and the educational context nowadays. It was also expected that the results of this study would provide possible impact on learning achievement and efficiency in learning English as a whole.

Research Methodology

This study was conducted using an electronic-based English proficiency testing system as an alternative efficient way to traditional paper-based testing at the participating university. Ethical approval was obtained from the Ethics Review Board of Rangsit University with reference number COA. No. RSUERB2020-062.

Population and Sample: The population included 2,851 freshmen university students, both male and female, of mixed proficiency levels in the English language from various faculties**.** The formula by Krejcie and Morgan **(**1970**)** was used to determine the appropriate sample size and clustered random sampling was applied to obtain the sample group of the study**.** Therefore, 355 students were selected as a sample group of the current study**.** The sample group consisted of freshmen students ranging in age from 19-22 with mixed genders and mixed English language ability from various faculties including Business Administration, Tourism and Hospitality, Communication Arts and Information Technology**.**

In order to obtain reliable and viable sources of qualitative data, at the beginning, the researchers planned to conduct the interview with 30 students from the sample group who voluntarily agreed to participate in the interview sessions**.** Nevertheless, due to the pandemic, all sessions had to be conducted online via an application for a real-time meeting and only 27 students showed up during the focus group sessions, since three of them had an unexpected Internet system malfunction**.** Therefore, four groups of six to seven freshmen students in each group with mixed abilities in English language took part in this focus group interview**.**

In addition, in order to adhere the reliability, the validity and efficiency of electronic-based English Proficiency Test, three sessions of pilot study were carried out with the students who were not in a sample group**.** Each session included a different group of 40 freshmen students ranging in age from 19 to 22, with mixed genders and mixed English language ability from various faculties mentioned above.

Research Instruments: This study involved the development of electronic-based English proficiency test (CEFR) and both the quantitative data and qualitative data were used with carefully constructed research instruments to secure both types of data. The research instruments which were used to collect the data were as follows: (1) MOODLE Platform; (2) Electronic-based English Proficiency Test (CEFR); (3) a questionnaire; and (4) a focus group interview.

In this study, MOODLE was used as a testing platform. As an open-source software, it allowed to compatible plugins were integrated with its main system. With its flexibility, a testing system can have different options that allow timing and IP strict access to exams, shuffling questions, general and specific feedback to students, automatic grading, and other interesting options. MOODLE, as an internet-based program, allowed delivery of the tests via desktops, laptops, tablets, and smartphones.

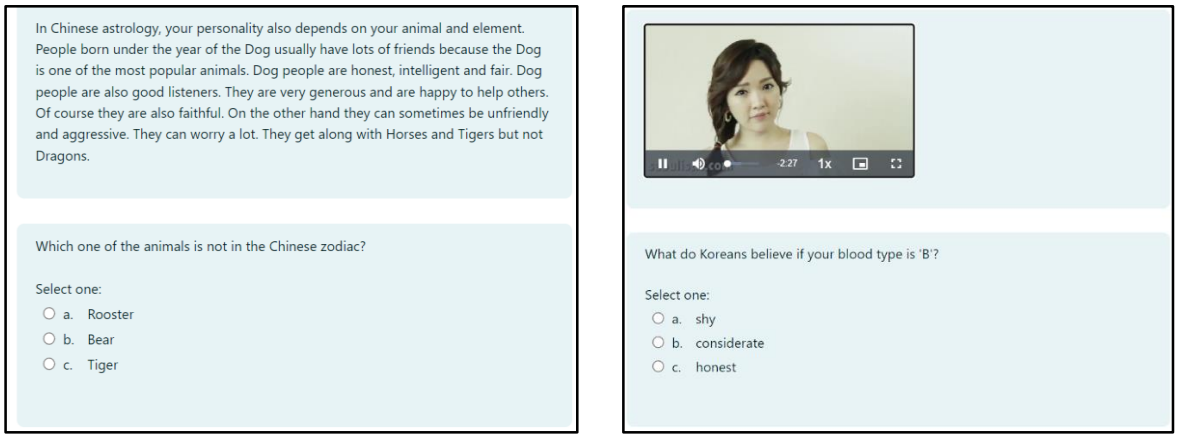

Figure 1 Screenshot of Reading and Listening Test Items on an Electronic-Based Testing System

An electronic-based English proficiency test was designed to assess the level of English proficiency only for reading and listening in this study. The test items were reviewed by experts to ensure that they were reliable, valid, and aligned with the standard topics of CEFR required for university students. The test was divided into two sections: the Listening Section and the Reading Section. Each section consisted of five parts with 30 test items per section which were aimed to measure student comprehension of written information and understanding of spoken English. Each section was timed for 40 minutes.

In order to obtain more in-depth data on the usability of electronic-based English proficiency test, the researchers administered the post-survey using a set of five-point Likert scale questionnaires, ranging from strongly disagree to strongly agree; 1=Strongly Disagree, 2=Disagree, 3=Neither Agree nor Disagree, 4=Agree and 5=Strongly Agree with all 355 students in a sample group.

In order to assess the usability of the electronic-based English proficiency test for tertiary-level students and to obtain more in-depth data, the researchers conducted a focus group interview asking the students to give responses for six questions in a group. Before being used for the interview sessions, these six questions had been validated by the experts and piloted with other students who were not involved in this data collection process. In order to have authentic responses, both researchers carried out all sessions of the interview asking the participating students to share, exchange and discuss their experience, perception, and attitude on having electronic-based English proficiency test.

Validity and Reliability: All research instruments were validated for content validity by three experts who were the university lecturers in English language teaching, in educational technology, and in curriculum and instruction**.** Afterwards, the Index of the Item Objective Congruency (IOC) of the instruments were calculated to check whether each item was aligned with the research objectives. The IOC scores were computed and analyzed for electronic-based English proficiency test questions using MOODLE, and the questionnaires and the interview questions, except the MOODLE Platform, which was required to be checked and approved by the Director of Cyber University of the participating university.

IOC was calculated by using the statistical formula of which the instruments with the value between 0.67 to 1 presented the validity whereas the value below 0.67 demonstrated inapplicability. In this study, almost all of the research instruments were rated between 0.67 to 1 which were considered valid and acceptable while only a few were rated below 0.67, with some comments from the validators for further editing and improvement.

The researchers conducted the reliability tests and three English language instructors who were teaching at the tertiary level and had the experience in CEFR were invited as the test writers. All of them had had the experience in English language teaching for more than 10 years. Then, the test items of electronic-based proficiency test were piloted for three sessions before they were applied for the data collection. Each session can be explained as follows:

Pilot 1: Forty freshmen students with mixed genders and English language ability were asked to do the 143-item test. Then, the results were computed and analyzed by the computer program for the difficulty and discrimination value. The test items with a difficulty value between 0.20-0.80 were acceptable and the discrimination value between 0.20-1.00 were applicable for further study. The test items were adjusted accordingly.

Pilot 2: Another group of 40 freshmen students with mixed genders and English language ability were asked to do the adjusted 120-item test. Here, Kuder-Richardson formula (KR-20) was used as the standard formula to check the reliability coefficient of the test items. The test results were computed and analyzed and the test items with a value higher than 0.70 were considered reliable.

Pilot 3: All 60 test items with acceptable difficulty values, discrimination values, and reliability values were uploaded to the MOODLE platform by the researchers. After that, another group of 40 freshmen students with mixed genders and English language ability were asked to do the electronic-based test. The results then were computed; however, no test items were adjusted or deleted in this process since the purpose of Pilot 3 was only to check the efficiency of the test on MOODLE Platform.

During the Pilot 3, the researchers also conducted a reliability test by distributing the questionnaire to the students after having them do the electronic-based English proficiency test and focus group interviews were also carried out with this group of the students to assure the quality and validity of the interview questions before implementing them in the actual study. The Cronbach's Alpha Rating Scale was applied to measure the reliability of 32 questionnaire items and subsequently only 23 items were reliable with the acceptable score, which were higher than 0.07. However, the over-all reliability statistics had a Cronbach's alpha (α) of 0.996, which indicated that this instrument had an excellent level of internal consistency.

Data Collection and Analysis: At the beginning of the study, each student in the sample group was informed about all details of the research procedures and requested to sign a consent letter with a witnessed signature**.** The researchers assured them that all the data obtained in the study would be kept confidential and would have no adverse effects on their grades**.** Also, the consent letters were kept by the researchers throughout the study**.** All of these were removed by the researchers at the end of the study**.** Additionally, the anonymity, the confidentiality and the security of the student-participants were maintained at all times**.** Each student was assigned an alphanumeric number in place of their name; therefore, the students were recorded as Interviewee 1, Interviewee 2, Interviewee 3, Interviewee 4, and so on throughout the study**.**

To obtain more in-depth data concerning the development and the usability of the electronic-based English proficiency test using MOODLE from the students in a sample group, mean and standard deviation were computed by a computer program and subsequently analyzed using post-survey questionnaire responses. The mean and standard deviation scores of four categories of the items on the questionnaire responses included system use, learning impact, test design, and user opinions on computer-based tests (CBT) and paper-based tests (PBT) were computed and analyzed. In addition, the mean and standard deviation scores of each category were also computed and analyzed separately.

Afterwards, each of these score results was interpreted and analyzed using Likert scale range interpretation of mean score (Brown, 2010) with the reference to student responses towards an electronic-based English proficiency test. This Likert scale range interpretation is shown in Table 1 below.

Table 1 Likert Scale Range Interpretation of Mean Score with Reference to Student Responses towards Electronic-Based English Proficiency Test

Level of opinion	Scores	Scale for means	Description
Strongly agree	5	4.51 - 5.00	Highest
Agree	4	3.51 - 4.50	High
Neither agree nor disagree	3	2.51 - 3.50	Moderate
Disagree	2	1.51 - 2.50	Low
Strongly disagree	1	1.00 - 1.50	Lowest

As previously mentioned, focus group interviews were carried out right after the students in a sample group completed electronic-based English proficiency test to find out their deeper perspectives and opinions as well as more authentic responses to the development and the usability of an electronic-based test. There were 27 students from different faculties with mixed genders and English language ability voluntarily participated in the focus group interview sessions. In order to obtain reliable sources of qualitative data and avoid any unnecessary bias and errors, both researchers conducted four rounds each of the focus group interview together.

Research results

Questionnaire: The questionnaire items for assessing the usability of the electronic-based English proficiency test for tertiary level students were classified into four categories: System Use, Learning Impact, User Opinions, and Design of the Test based on the analysis of the interview responses of the interviewees.

Table 2 Questionnaire items category

Questionnaire Item Category	No. of Items	Item Numbers
System Use	6	1, 7, 10, 12, 14, and 18
Learning Impact	3	2, 13, and 19
User Opinion	4	3, 6, 8, and 9
Design of the Test	10	4, 5, 11, 15, 16, 17, 20, 21, 22, and 23

The scores obtained from the analysis were used to indicate the high and low level of agreement of students with the questionnaire items. Simply put, the higher scores represented the higher-level agreement of students with the items on the questionnaire, whereas the lower scores demonstrated the lower level of their agreement; in other words, disagreement with the items on the questionnaire, respectively. Table 3 below displays the mean and standard deviation of each questionnaire item together with the interpretation of the level of the agreement or disagreement with the items with the students.

Table 3 Quantitative Data and Interpretation of Level of Questionnaire Items for the Level of Agreement and Disagreement among the Students

Item No.	Items	Mean	SD	Level of Agreement
1	Operation system of the electronic-based English proficiency test is smooth and convenient.	4.48	0.58	Agree
2	Assessment on the electronic-based English proficiency test is fair.	4.20	0.62	Agree
3	The electronic-based English proficiency test lessens the anxiety of examinees more than a paper-based test.	4.31	0.83	Agree
4	All directions of the electronic-based English proficiency test are easy to follow without any confusion.	4.27	0.72	Agree
5	The design of the electronic-based English proficiency test is appropriate.	4.39	0.69	Agree
6	It is difficult to cheat on an electronic-based English proficiency test.	3.93	0.84	Agree
7	Browsing web pages on electronic-based English proficiency test is easy.	3.95	0.87	Agree
8	The electronic-based English proficiency test is faster to complete than a paper-based test.	4.30	0.81	Agree
9	The electronic-based English proficiency test is more modern than a paper-based test.	4.40	0.67	Agree
10	The electronic-based English proficiency test is more systematic than a paper-based test.	4.35	0.78	Agree
11	Registration process of the electronic-based English proficiency test is easy.	4.40	0.67	Agree
12	Log-in interface of the electronic-based English proficiency test is user-friendly.	4.38	0.71	Agree
13	Immediate feedback on the electronic-based English proficiency test helps the examinee to reflect on their learning.	4.07	0.65	Agree
14	Registering the interface of the electronic-based English proficiency test is user-friendly.	4.32	0.65	Agree
15	Seeing the timer on the electronic-based English proficiency test helps the examinee progress better.	4.23	0.78	Agree
16	Exam interface of the electronic-based English proficiency test is friendly-user.	4.31	0.76	Agree
17	Exam interface design of the electronic-based English proficiency test is appropriate.	4.30	0.69	Agree
18	Exam results interface design of the electronic-based English proficiency test is appropriate.	4.24	0.73	Agree
19	It is hopeful that the electronic-based English proficiency test will be used in other English courses.	4.18	0.72	Agree
20	Previous exam attempts interface of the electronic-based English proficiency test is user-friendly.	4.31	0.66	Agree
21	Page-by-page style of questions facilitates the examinee in taking a test.	4.42	0.68	Agree
22	Overview interface of the electronic-based English proficiency test is user-friendly.	4.33	0.75	Agree
23	Overview of the interface design of the electronic-based English proficiency test is not appropriate.	4.26	0.72	Agree
	Total	4.27	0.27	Agree

Table 3 revealed that the total score of the level of agreement of the students with the questionnaire items on the development and the usability of electronic-based English proficiency test was at a high level. In other words, they generally agreed with all of the items with a total mean ($\bar{x}$) score of 4.27 and SD of 0.27, by examining the mean score of each questionnaire item concerning the development and the usability of the electronic-based English proficiency test more thoroughly, each of the results remarkably demonstrated the

high level of student agreement with mean scores ranging from 3.93 to 4.48, respectively. The highest rated score was Item 1, "Operation system of the electronic-based English proficiency test is smooth and convenient", with a mean score of 4.48 (SD=0.58) and the lowest rated one was Item 6, "It is difficult to cheat on the electronic-based English proficiency test", with the mean score of 3.93 (SD=0.84). By investigating each item more closely, it was found that three other items that were rated at a high level of agreement next to the highest, included Item 21, "Page-by-page style of questions facilitates the examinee in taking a test", with a mean score of 4.42 (SD=0.68); Item 9, "The electronic-based English proficiency test is more modern than the paper-based test", with a mean score of 4.40 (SD = 0.67); and Item 11, "Registration process of the electronic-based English proficiency test is easy." with the mean score of 4.40 (SD=0.67) as well. Tables 4, 5, 6 and 10 below showed the mean, standard deviation, student level of agreement, and interpretation of the questionnaire items of aforementioned categories, respectively.

Table 4 Quantitative Data and Interpretation of Level of Agreement among Students with the Questionnaire Items in the System Use Category

Item No.	Items	Mean	SD	Level of Agreement
1	Operation system of the electronic-based English proficiency test is smooth and convenient.	4.48	0.58	Agree
7	Browsing among web pages on the electronic-based English proficiency test is easy.	3.95	0.87	Agree
10	The electronic-based English proficiency test is more systematic than a paper-based test is.	4.35	0.78	Agree
12	Log-in interface of the electronic-based English proficiency test is user-friendly.	4.38	0.71	Agree
14	Register interface of the electronic-based English proficiency test is user-friendly.	4.32	0.65	Agree
18	Exam results interface design of the electronic-based English proficiency test is appropriate.	4.24	0.73	Agree
	Total	4.30	0.75	Agree

Regarding the questionnaire items on system use, the level of agreement of the students in this category was regarded at a high level; in other words, the students agreed with all of these items with the total mean ($\bar{x}$) score of 4.30 and SD of 0.75. As mentioned previously, Item 1, "Operation system of the electronic-based English proficiency test is smooth and convenient" was rated highest among all 23 items on the questionnaire with the mean score of 4.48 and SD of 0.58, whereas Item 7, "Browsing among web pages on the electronic-based English proficiency test is easy" was rated as the lowest in this category with the mean ($\bar{x}$) score of 3.95 and SD of 0.87.

Table 5 Quantitative Data and Interpretation of Level of Agreement among Students with the Questionnaire Items in the Learning Impact Category

Item No.	Items	Mean	SD	Level of Agreement
2	Assessment on the electronic-based English proficiency test is fair.	4.20	0.62	Agree
13	Immediate feedback on the electronic-based English proficiency test helps the examinee to reflect on their learning.	4.07	0.65	Agree
19	It is hopeful that the electronic-based English proficiency test will be used in other English courses.	4.18	0.72	Agree
	Total	4.18	0.67	Agree

According to the questionnaire items on the learning impact category above, the level of agreement of the students in this category was also at a high level or agree with the total mean ($\bar{x}$) score of 4.18 and SD of 0.67. Item 2, "Assessment of the electronic-based English proficiency test is fair" was rated at the highest mean ($\bar{x}$) score in this category ($\bar{x}$=4.20 and SD=0.62) while the other two items; Item 19, "It is hoped that the electronic-based English proficiency test will be used in other English courses" together with Item 13, "Immediate feedback on the electronic-based English proficiency test helps the examinee to reflect on their learning" were rated with lower mean scores of 4.18 (SD=0.72) and 4.07 (SD=0.65) respectively.

Table 6 Quantitative Data and Interpretation of Level of Agreement among Students with the Questionnaire Items in the User Opinion Category

Item No.	Items	Mean	SD	Level of Agreement
3	The electronic-based English proficiency test lessens the anxiety of examinee more than a paper-based test.	4.31	0.83	Agree
6	It is difficult to cheat on the electronic-based English proficiency test.	3.93	0.84	Agree
8	The electronic-based English proficiency test is faster to complete than a paper-based test.	4.30	0.81	Agree
9	The electronic-based English proficiency test is more modern than a paper-based test.	4.40	0.67	Agree
	Total	4.25	0.81	Agree

By investigating the data on the questionnaire items in User Opinion category above, it was found that the level of agreement among the students on the items in this category was considered as of the high level or agree as well with the total mean ($\bar{x}$) score of 4.25 and SD of 0.81. Item 9, "The electronic-based English proficiency test is more modern than a paper-based test" was given the highest mean score of 4.40 and a SD of 0.67 in this category. Interestingly, Item 6, "It is difficult to cheat on the electronic-based English proficiency test." was rated as the lowest among all 23 items of the questionnaire with a mean score of 3.93 (SD=0.84) and its mean score was; therefore, the lowest in this category.

Table 7 Quantitative Data and Interpretation of Level of Agreement among Students with the Questionnaire Items in the Test Design Category

Item No.	Items	Mean	SD	Level of Agreement
4	All the directions on the electronic-based English proficiency test are easy to follow without any confusion.	4.27	0.72	Agree
5	The design of the electronic-based English proficiency test is appropriate.	4.39	0.69	Agree
11	The registration process of the electronic-based English proficiency test is easy.	4.40	0.67	Agree
15	Seeing the timer on the electronic-based English proficiency test helps the examinee progress better.	4.23	0.78	Agree
16	Exam interface of the electronic-based English proficiency test is user-friendly.	4.31	0.76	Agree
17	Exam interface design of the electronic-based English proficiency test is appropriate.	4.30	0.69	Agree
20	Previous exam attempts interface of the electronic-based English proficiency test is user-friendly.	4.31	0.66	Agree
21	Page-by-page style of questions facilitates the examinee in taking a test.	4.42	0.68	Agree

Table 7 (continue)

Item No.	Items	Mean	SD	Level of Agreement
22	Overview interface of the electronic-based English proficiency test is user-friendly.	4.33	0.75	Agree
23	Overview of the interface design of the electronic-based English proficiency test is appropriate.	4.26	0.72	Agree
	Total	4.33	0.71	Agree

By considering the computed data of the questionnaire items in the design of the test category, it was found that the level of agreement among the students on the questionnaire items in this category are also regarded at a high level; simply put, the students agreed with all of the questionnaire items in this category with a total mean ($\bar{x}$) score of 4.33 and SD of 0.71. Noticeably, Item 21, "Page-by-page style of questions facilitates the examinee in taking a test" was rated at a high level of agreement among students at the highest ($\bar{x}$) score in this category ($\bar{x}$=4.42 and SD=0.68), and Item 11, "Registration process of the electronic-based English proficiency test is easy" was rated as the second highest in this category ($\bar{x}$=4.40 and SD=0.67). Item 15, "Seeing the timer on the electronic-based English proficiency test helps the examinee progress better" was also rated at a high level of student agreement but with the lowest mean score in this category ($\bar{x}$=4.23 and SD=0.78).

Up to this point, it may be noted that the total mean score of the test design category was rated as the highest of all mean scores in four categories mentioned above with the total mean ($\bar{x}$) score of 4.33 and SD of 0.71. The second highest total mean score was given to the system use category ($\bar{x}$=4.30 and SD=0.75); the next was the user opinion category ($\bar{x}$=4.25 and SD=0.81); and the lowest rated was the learning impact category, with the total mean ($\bar{x}$) score of 4.18 and SD of 0.67).

Electronic-Based English Proficiency Test: The test items consisted of 60 questions for 60 points, divided into two parts including 30 questions for Reading (30 points) and the other 30 questions for Listening part (30 points). The students were assigned to do the electronic-based English Proficiency test using the MOODLE Platform. Each student was given 80 minutes to complete the test. Analysis and the results of the tests, mean scores and standard deviation are in Table 8 below.

Table 8 Electronic-Based English Proficiency Test Scores of the Students

Test items	Mean	SD
Reading	19.93	5.63
Listening	22.31	5.18
Total	42.25	9.98

Based on the table above, the total mean scores of the students on the electronic-based test was 42.25, with SD of 9.98. To examine each aspect of the test items, it appeared that the mean score of the listening section ($\bar{x}$=22.31, SD=5.18) was a little higher than the mean score of the reading section ($\bar{x}$=19.93, SD=5.63), resulting in a mean difference of only 2.38. Simply put, student performance on the listening section was better than their performance on the reading section.

Focus Group Interview: Focus group interviews were carried out with 27 students who voluntarily participated as interviewees in interview sessions. The researchers asked each group of the students to respond to six questions, regarding their experience, perception, and attitudes to electronic-based English proficiency test (CEFR). The researchers applied

the thematic analysis method to analyze and interpret the acquired data. Therefore, the core themes obtained from the responses of the students were transcribed, translated, analyzed, then subsequently summarized and the excerpts of the responses of the participants to each question were as follows:

1. How do you feel about the electronic-based English proficiency test?

- Convenience of electronic-based English proficiency test: more than half of the interviewees said that this kind of test was convenient. They were able to do the test everywhere, with gadgets like a mobile phone or an iPad, and without travelling to an exam room. Also, most of them liked this type of test since they did not need to use paper or a pen and were able to recheck for the correct answers and received the scores right away.

- Pressure and distraction-free: Several interviewees remarked that they had less pressure on the electronic-based English proficiency test than the traditional type of test. The atmosphere in the exam room made them tense and there were many distractions. Conversely, they tended to have better concentration and attention while doing the electronic-based test.

- Efficient time management: Some interviewees reported that electronic-based English proficiency tests helped them to manage the time and complete the test efficiently.

- Revision of test: some interviewees stated that they were able to recheck and correct mistakes for the right answer with this electronic-based test since they could review the test items easily and as many times as they liked.

- Safety: One interviewee mentioned that it was impossible to cheat or copy from other students on the electronic-based English proficiency test since all students were required to have a password to access the system.

2. What did you like most about the electronic-based English proficiency test? Why?

- Reading part: One-third of the interviewees preferred the reading part of the electronic-based English proficiency test. Some liked the physical features of the reading part on the electronic-based test such as the font sizes and the font colors of the reading texts which were easy for them to read.

- Listening part: Of the same number of the interviewees who liked the reading part, nine interviewees noted that they liked the listening part because it appeared to be easier for them since there were pictures, audio and visual clips, as well as multimedia features, provided on the test to facilitate their understanding.

- System of the electronic-based English proficiency test: Several interviewees favored the system of this test concerning the duration of the test, the visibility of the testing time, the test format, the safety factor, the paper-less style of the test, and more opportunity for cross-checking. Some added that the system of this electronic test was fast, convenient and stable.

3. What did you dislike the most about the electronic-based English proficiency test and why?

- System of the electronic-based English proficiency test: Several interviewees mentioned the limitations of the electronic test system. Many of them also remarked about the function buttons of the video clips on the listening part, such as the time cursors that they were too small to handle the gadgets.

- Test time duration: Three interviewees remarked that they did not like the time given to do the test. They felt that the time was not enough for them to complete all items on

this electronic test, especially on the reading part since they had to read the texts and answer all of the questions.

4. Did you have any difficulties in taking the electronic-based English proficiency test? Explain.

- System of electronic-based English proficiency test: Four interviewees mentioned that the difficulties in taking the electronic-based test was caused by Internet systems or a Wi-Fi signals. They had to reconnect the Internet when the connection was weak or unstable and wasted their time. However, a few of them added that this difficulty was out of their control.

5. Could you explain the advantages or benefits of the electronic-based English proficiency test?

- Convenience of the electronic-based English proficiency test: Interestingly, all interviewees agreed on the convenience of the electronic-based tests. They pointed out that the electronic-based test was remarkably more convenient than the paper-based test since they were able to do the test anywhere or anytime without traveling to the exam room and using whichever device that they were able to afford.

- Compatibility of the test format: some interviewees noted about the compatibility of the electronic-based test as one of its advantages. They liked its compatible format since all test items, such as reading texts and the questions were on the same page. To simply put, they did not waste the time to turn the test paper pages back and forth. They added that they did not waste their time to erase and correct any mistake on the electronic-based test.

- Behavior with the electronic-based English proficiency test: quite surprisingly, almost 20% of the interviewees stated that there was no pressure in doing the electronic-based test like in the traditional exam room.

- Safety of the electronic-based English proficiency test: Some interviewees remarked on the safety of using the electronic-test during the pandemic.

6. Which components or areas of the electronic-based English proficiency test needed to be improved? Explain.

- System of electronic-based English proficiency test: few interviewees advised that more complicated password should be required to access the test system since the current required password was too simple. In addition, the screen for video clips should be adjusted for increased convenience.

Discussion

Noticeably, the students in the sample group positively agreed with the development and usability of the electronic-based English proficiency test. Their highly rated agreement level results, as well as positive responses were well demonstrated via the data collection of the questionnaire, as well as the focus group interview. All sets of data clearly revealed that this electronic-based test; as an alternative, modern style of the test provided a great number of benefits and advantages for the students or the examinees. The section below is to discuss the major findings, according to the research objectives of the study.

The results derived from the questionnaire revealed that the students in a sample group agreed with the questionnaire items concerning the development and usability of the electronic-based English proficiency test. This was supported by the level of agreement with the total mean ($\bar{x}$) score of 4.27 and SD of 0.27, which was at a high level. The results

supported by the findings collected from the focus group interviews and all interviewees preferred the electronic-based English proficiency test to the traditional paper-based one. They regarded this new trend in tests as convenient, fast, compatible, cost-saving, time-saving, pressure-free, and suitable, especially during the pandemic. In other words, a new normal in education. Simply put, the responses of students from the questionnaire and the focus group interview correspondingly showed the positivity on the development and the usability of the electronic-based test. This was in line with the results of the study on the electronic-based assessment by Kundu and Bej (2021) which left a positive impact on the perceptions of students as well.

By investigating the 23-item questionnaire in detail, it could be seen that Questionnaire Item 1 "Operation system of the electronic-based English proficiency test is smooth and convenient" was rated with the highest mean score ($\bar{x}$=4.48 and SD=0.58), Questionnaire Item 21, "Page-by-page style of questions facilitates the examinee in taking a test" was rated as the second by mean score ($\bar{x}$) of 4.42 and SD of 0.68. These corresponded with the positive responses of the interviewees on the focus group interview, concerning their satisfaction and preference for the modern, convenient and user-friendly system of the electronic-based test.

Two items; Item 6, "It is difficult to cheat on the electronic-based English proficiency test." and Item 7, "Browsing among web pages on the electronic-based English proficiency test is easy" were rated as the two lowest with the mean scores which appeared to be lower than 4 out of 5. The mean score ($\bar{x}$) of Item 6 was 3.93 (SD=0.84) and of Item 7 was 3.95 (SD=0.87). Obviously, the focus group interview responses well supported the results on the browsing difficulty of the electronic-based test. Some interviewees showed dislike and reported the inappropriate size of function buttons of the video clips on the listening part of the electronic test. This created the difficulty in terms of browsing and controlling the cursors while doing the test. In terms of cheating during the test, the responses of interviewees notably supported the results of Questionnaire Item 6 that was rated with the lowest mean score. Many interviewees stated that the more complicated password should be required to access the system and the current one was too simple. They suggested that teachers may occasionally have all students do electronic-based test in the examination room for security and preventing any possible cheating. In short, all stakeholders, such as teachers or examiners should be concerned about any possible cheating problems when conducting the electronic-based test. This way would help assure that all students would have sufficient opportunities to learn and gain knowledge.

Quite surprisingly, a lot of interviewees reported that they had less pressure or anxiety while taking the electronic-based test rather than the paper-based one. This was evidently supported with the highly rated agreement result of Questionnaire Item 3, "The electronic-based English proficiency test better lessens the examinee's anxiety than a paper-based test does" with a mean score ($\bar{x}$) of 4.31 and SD of 0.83. They added that there was a lot of distraction in the traditional examination room and the atmosphere literally made them tense and nervous. In addition, some of them also remarked that there was no pressure in doing the electronic-based test and they did the test anywhere in a relaxed mood, better concentration and attention. A study by Blanco and Ginovart, (2010) supported these aforementioned findings and claimed that the electronic-based test kept the students engaged in the class and helped reduce anxiety before any high-stakes assessments.

Additionally, some of the interviewees stated that the electronic-based test helped them to manage time and complete the test more efficiently. With a fast and more modern system, they had enough time to recheck and select the correct answers and able to correct the mistakes right away on the system. The high level of student agreement on Questionnaire

Item 8, "The electronic-based English proficiency test is faster to complete than a paper-based test" ($\bar{x}$=4.30 and SD=0.81), and Item 10, "The electronic-based English proficiency test is more systematic than a paper-based test" ($\bar{x}$=4.35 and SD=0.78) which was well supported by these findings. This was also corresponding to the study by Kauffman (2015) which revealed that the various success factors of students, such as self-regulation, time management, self-evaluation, and prompt feedback on performance were related to their experiences, perceptions and satisfaction with online test and assessment.

The interviewees noted that the system, design, and all physical features were user-friendly and appropriate, and the number of the test items were all suitable. These positive responses were evidently in line with the results of highly rated agreement level by the students in the sample group on Questionnaire Item 22, "Overview interface of the electronic-based English proficiency test is user-friendly" ($\bar{x}$=4.33 and SD=0.75), and Questionnaire Item 23, "Overview interface design of the electronic-based English proficiency test is appropriate" ($\bar{x}$=4.26 and SD=0.72) respectively. The studies by Barge and Londhe (2014) and Padayachee et al (2019) remarkably supported all these satisfactory responses by students. To put it simply, the electronic-based test and its assessment provided a great number of benefits and advantages in terms of reducing anxiety and stress, increasing the confidence and skills of the students, fostering a positive attitude to learning, encouraging them to study more and focus on the subject more efficiently.

Conclusion

The overall results and findings of the study demonstrated that conducting this electronic-based English proficiency testing system had appealing effects on English language learners and also determined the great potential of this alternative test due to its aforementioned considerable benefits and advantages to every stakeholder, such as English language learners/examinees, teachers/examiners, and administrator.

For recommendations for further studies, the content of the test should be expanded to include a wider range of language skills and question types for a more authentic assessment of English proficiency. The sample size and diversity of participants should be increased to obtain more reliable data and determine the suitability of the test for different English language learners. Experimental research can be conducted by comparing the electronic-based test with the traditional paper-based test to gain broader insights.

This electronic-based English proficiency testing system should then be utilized more widely alongside the rapid growth of digital education technology and fast-paced education context. By having faith in the results obtained from the electronic-based test with no inherent bias, the students/examinees should be confident that they will be treated the same, regardless of linguistic, educational, socio-economic and social backgrounds. It may not be exaggerating to claim that the qualification that students derived from this assessment may act as a passport for their bright career, productive language skills, permanent language competence, and valuable education.

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