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Research Article

Student's Perception Towards the Implementation of Moodle-Based E-Learning Platform in ELT: A Rasch Model Measurement

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ABSTRACT

The provision of high-end technology have brought a significant impact on the world of education. Teacher and student are expected to collaborate effectively in learning process using technology. This paper reveals the investigation on student's perception towards the implementation of Moodle-based e-learning in ELT as well as some problems encountered by the users (learners) in utilizing the platform. A mix method approach was employed using online survey and interview. Three classes consisting 62 students who had experienced a moodle-based e-learning were consented and agreed to participate in the study. The data obtained from the online survey was analyzed using a RASCH measurement analysis with IRT (Item Response Theory) approach. The result shows a positive trend on student's perceived usefulness (PU), ease of use (EoU), behavioral intention (BoI) towards the implementation of the platform. This article also provides several suggestions for further research and development within the area of moodle-based e-learning platform.

Keywords: *Moodle-based e-learning, ELT, RASCH, perceived usefulness, ease of use, and behavioral intention*

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INTRODUCTION

The issue of technology utilization in education, particularly in English Language Teaching (ELT) has become a trending topic in recent years (e.g., Bradley, 2013; Chapelle, 2003; Dudeney & Hockly, 2007; Jarvis, 2005; Kirkwood & Price, 2013; Lind & Jennewine, 2009; Young, 2004). Teachers are expected to be able to demonstrate their ability in integrating and incorporating technology within and outside the classroom. An instant access to technology (internet, laptops, and smartphones) has created an ample opportunity for teachers to incorporate, integrate, and utilize them in teaching and learning context. Dealing with technology calls for an assiduity in learning new skills and quick individual acceptance to it. The rapid changing and development of new technology in education have become a daunting task for both teacher and student who have a low technology acceptance rate. They will need more time to study, comprehend, and utilize the new features and system built up in the new technology. In the last few years, the uptake of learning management system (LMS) into the world of online teaching and learning has promoted the student's motivation, learning participation, and self-directed learning (SDL) (Amandu et al., 2013; Musdariah et al., 2021).

A recent study in the area of moodle-based e-learning reveals five factors generating the acceptance of moodle as an e-learning platform; 1) community influence, 2) satisfaction, 3) service quality, 4) learnability, 5) and technical quality (Baytiyeh, 2013). To promote the student's motivation, participation, and SDL, the platform should meet the learner's expectation and satisfaction. In a higher education context, LMS moodle has been experienced successful in promoting the student' interest, motivation, and SDL although some limitations and gaps in its implementation were also identified (Barge & Londhe, 2014; Boehning, 2008; Pektaş & Demirkan, 2011; Pieri, 2014; Siirak, 2011).

"Students find Moodle-based e-learning effective, with future improvements needed in design and performance."

This study aims at investigating the student perception towards the implementation of moodle-based e-learning. The investigation focuses on three main areas: 1) perceived usefulness, 2) ease of use, and 3) behavioral intention. The result of the inquiry will be of much benefit to the further development of the e-learning platform for ELT. This e-learning was designed for use in ELT as a Virtual Learning Environment (VLE). "The activities in VLE included synchronous and asynchronous interaction between students within the class" (Evans, 2009). With this platform, students can perform online learning activities such as the ease of access to digital contents and other VLE activities. Dealing with e-learning within the complexity of technology requires e-learning administrator, teacher, and student to possess technological literacy in processing digital data. Incorporating e-learning in education is limited to those who have low technological competencies in which the platform does not provide an instant use and teaching content built in it. The teacher and administrator have to collaborate in providing digital content to fit the platform. The in-service administrator should be able to manage the platform to provide an excellent service to multiple users that come with different needs and expectations. On the other hand,

teachers as users and content developers will need to have enough understanding of the platform features, plug-in, and application associated with moodle. Uploading and managing the basic content responsibly relies on teacher's skills and creativity. Beyond these skills, methodologically, teachers will need to have more experience and framework on how to perform an online language teaching skill (Compton, 2009). A universal instructional design principles for moodle use in online teaching has been exposed (Elias, 2010). A moodling professional training that worked has also been introduced (Hemphill & McCaw, 2009).

This research is one of the series of a long-term study and development in incorporating Moodle as an e-learning platform into ELT practices. The result of this research will contribute to the further studies in this area. The area of further investigation will fall within the e-learning practices, best application and plug-in associated with Moodle, and intensive training for inexperienced teachers. To this point, training for new instructors and students in the area of Moodle instructional design and online course is necessary since moodle has greatly contributed to the largely fruitful and motivating learning experience of learners (Holton, 2010).

This study explores the effectiveness of a moodle-based e-learning platform implemented for fifth-semester students in an English course. The research focuses on understanding students' perceptions of the platform, particularly in terms of its usefulness, ease of use, and behavioral intention to continue using it. The following questions guided this study:

RQ1: How do students perceive the usefulness of the moodle-based e-learning platform in supporting their learning process?
RQ2: How easy do students find the moodle-based platform to navigate and utilize for their learning activities?
RQ3: What is the students' intention to continue using the e-learning platform in the future?
RQ4: What challenges do students encounter while using the platform?

LITERATURE REVIEW

ELT, Student's Cognition, and the Use of Technology (Moodle)

There have been many studies on the use of technology in education particularly in English Language Teaching (ELT) environment, but little attention to the student's cognition on how technology brings of much benefit and contribution to learners' knowledge acquisition. The integration of technology in ELT should also consider the student' cognition as a determinant factor in the process of shaping knowledge. The teacher pedagogical content knowledge (TPACK) has also been outlined in many publications emphasizing its importance in shaping a technological-based teaching and learning(Harris & Hofer, 2011; Mishra & Koehler, 2006, 2008; Niess, 2011). Teachers should have a good understanding of what they are going to teach and share with students and also able to select technological tools that can effectively be used to deliver the content materials(Barge, 2012). The massive

use of technology in education nowadays has attracted CALL researchers to do more investigation in this area. Regarding students' cognition and knowledge acquisition, Stozhko et.al (2015) reported that there were a significant increase and improvement of student's cognitive level after being engaged with technology.

Applying an online learning platform within the ELT context is not as easy as a teacher could imagine and think it over although the handbook and other instructional design for Moodle are now available online. The use of moodle in language teaching simply needs guidance and direction on how teachers can organize their materials and resources within the platform. The application of moodle on an EFL collegiate writing environment remains several technical difficulties and pedagogical challenges (Wu, 2008). The practical guideline for moodle use in English language teaching focusing on listening has also been published (Stanford, 2009). The EFL teachers should have a good understanding of exploring moodle and knowing how to use best the platform in ELT environment. A technology-based skillset should be possessed by an EFL teacher to be able to incorporate digital literacy into the English teaching and learning context. With a real digital literacy, an EFL teacher will find it easier to select the appropriate technological tools for teaching a specific subject and/or topic of discussion. Several examples of activities relating to digital literacy have been comprehensively outlined (Dudeney et al., 2014).

E-Learning in Vocational Higher Education

Incorporating new technology into education particularly in ELT is partly necessary to face this globalization era. The availability of web-based learning platform systems such as moodle and other platforms has brought a significant impact the way people teach, disseminate, participate, and engage in learning. The online learning interaction in now taken into account with a broader changes and accessibility to the learning contents and materials. The e-learning is not to be contested with the existing methodology applied in most schools or higher education, and/or a changing pedagogy from where learning is naturally originated, but it is to diversify learning methodology in integrated media and to make the profession of teaching a lot easier. The pedagogical models for e-learning have been introduced emphasizing the transformative interaction between the models, instructional strategies, and learning technologies (Dabbagh, 2005).

In higher education, from a scientific teaching context and perspective, a shift to technology-enhanced language teaching and learning should be more developed and intensified. From the traditional teaching perspective, the teacher-student interaction therein is limited to classroom-based learning where all learning activities are associated with print-based literacy. This learning situation still exists in most classrooms within the VHE. The print-based literacy is not considered as an ineffective way, but more likely an efficiency in learning. An e-learning containing a digital contents and materials allows teacher and student to shift from traditional literacy to digital literacy. The use of literacy in an online learning should consider several principles in which the literacy may vary within the CALL context and cultures (Egbert et al., 2012). A paperback version of books and resources can now be read in digital or Kindle version that promotes a paperless literature. The students can read the materials in a digital version through their digital devices such as smartphones,

iPads, and tablets. Despite reading digital contents, an interactive and dynamic learning can also be formed through moodle in which the platform allows learners to submit files online using the feature built in it. This initial research will bring many contributions to EFL learning in VHE (Polytechnic) on how the moodle-based e-learning is perceived regarding the usefulness, ease of use, and behavioral intention.

Previous relevant studies

A great dubiety on Moodle to be considered as a formal learning management system (LMS) for use in higher education had been further investigated. The investigation was to compare two learning management systems; moodle and blackboard. The result of this survey revealed that moodle appeared worthy of being an alternative learning system (Bremer & Bryant, 2005). Following this study, high penetration to moodle has increased within the last ten years. Regarding the learnability of this platform, some investigation were conducted within this area particularly the users' acceptance and use of moodle (Baytiyeh, 2013; Chou, 2014; Hsu, 2012; Mahdi, 2014; Sanchez-Santamaria et al., 2012). Baytiyeh (2013) focused the investigation on 189 professors and 1.867 students through an online survey. This study reported that community influence is highly rated by the participants among five generating factors investigated.

Building a virtual learning environment (VLE) and preparing teachers to teach language online (skills, roles, and responsibilities) should base on a framework as well as the training programs related to it (Compton, 2009). However, a further investigation should fall into the area of teacher's readiness to utilize the platform. The teacher has a crucial role in incorporating and integrating technology into teaching and learning environment. They have to be equipped with technological skills and competencies to work on such e-learning. Ideally, before being engaged in e-learning, both teacher and administrator should have technological competencies to support their jobs.

> …" the skills consist of four generic domains computer-related skills; (1) Basic Technology Operation, (2) Personal and Professional Use of Technology Tools, (3) Social, Ethical, and Human Issues, and (4) Application of Technology in Instruction" (Cohen & Monahan, 1998 p.1)

Technology as an interactive medium in manipulating digital information has pervaded all aspects of life and almost every field of human endeavor (TTCC, 1998). Incorporating technology is not merely about the computer-related skills, but also a healthy and positive attitude towards technology should be taken into account. A study conducted in Nigeria within the area of ICT use in education revealed that both teacher and student showed a positive attitude towards technology (M. O. Yusuf & Balogun, 2011).

METHOD

Research Design

This study employed a mixed-method approach that combine survey and interview as data collection tools (Brannen, 2005; Creswell, 2014; Creswell & Clark, 2018). A moodle-based e-learning platform was utilized during the semester intake 2023/2024. Sixty-two students from three different classes were enrolled in the e-learning. The students were in level three (semester 5) who enrolled the English subject. The participating students engaged enthusiastically in e-learning platform during the semester. The selection of participants was based on the level of study considering the semester five students have completed computer-related subject as well as the web building course (see the previous relevant studies). However, as it was a new learning platform for students, they were equipped with a practical guide on how they should deal with it. Despite using the practical guide, they are also provided some tutorial videos embedded into the platform as well as the external links navigating to several online sources. The teacher-student interaction shifted from offline learning system to an online learning system. It is also important to put an emphasis and limitation to this e-learning implementation that the platform is more likely a tool and/or a medium for facilitating and assisting learning. The use of this e-learning was limited to the types of interactions and activities in which the platform provided an access to digital contents and materials as well as the submission task features built in it.

Participants

The study involved 62 fifth-semester students from three classes: Class A (N=20 students), Class B (N=21), and Class C (N=21), all enrolled in the English subject. They were trained and prepared to use the moodle-based e-learning platform. To support their engagement, practical guides, tutorial videos, and external resource links were provided. The platform served as a tool to facilitate access to digital content, materials, and task submissions, enhancing teacher-student interaction in an online learning environment.

Table 1.
Characteristics of participants

Class	Level	Semester	Subject enrolled	Number of students	Additional Notes
Class A	Pre-intermediate	Semester 5	English	20	Completed moodle training
Class B	Pre-intermediate	Semester 5	English	21	Completed moodle training
Class C	Pre-intermediate	Semester 5	English	21	Completed moodle training
			Total	62	

Data Collection

The data collection procedure involved two methods: an online survey and open-ended interviews. At the end of the semester, all participants completed a Google Forms survey to assess their perceptions of the e-learning platform. The survey consisted of 21 questions on perceived usefulness, 14 questions on ease of use, and 6 questions on behavioral intention, all measured using a 1-5 rating scale. This survey provided quantitative data on student

experiences. In addition, open-ended interviews were conducted with 15 randomly selected participants to gather qualitative insights. Random selection ensured fairness, as all students were equally capable of providing relevant information. The interviews allowed participants to elaborate on their experiences and perspectives, complementing the survey findings for a more comprehensive understanding.

Data Analysis

The data analysis was conducted using both quantitative and qualitative approaches. Quantitative data were collected through an online survey administered via Google Forms at the end of the semester. The survey consisted of 21 questions on perceived usefulness, 14 questions on ease of use, and 6 questions on behavioral intention, measured on a rating scale of 1-5. Since the data were ordinal in nature, arithmetic calculations were not applied. Instead, the RASCH model measurement was employed using WINSTEP software to analyze the data and obtain logit values for both participants and items. This analysis provided a clear description of student perceptions mapped onto a construct map (Bond & M. Fox, 2015; Sumintono & Widhiarso, 2013). Qualitative data were collected through open-ended interviews with 15 randomly selected participants, representing a subset of the total 62 students. Random selection was used to ensure fairness, as all participants were equally qualified to provide the required information. The qualitative data complemented the survey results by offering deeper insights into the students' experiences and perceptions of the e-learning platform. The study used thematic analysis to analyze the transcribed interview data (Braun & Clarke, 2006).

FINDINGS

The results of data analysis provide information about the three primary domains of investigation; (1) perceived usefulness, (2) ease of use, and (3) behavioral intention. The online survey provides a raw data from sixty-two respondents recorded and exported from the directory of Google form. In the process of data analysis, an arithmetic calculation cannot be applied since the type of data (rating scale 1-5) obtained from the questionnaire is originally ordinal in nature symbolizing and representing the level of agreement. Based on the measurement principles for ordinal data analysis, the data must be converted to an equal interval value. To perform a better analysis, the data processing relied on the RASCH-based measurement software called WINSTEP®.

Unlike with classical test theory (CTT), this measurement was not only analyzing the items' reliability, but also the person (respondents) reliability. The person reliability provided information whether or not the respondents are reliable and trusted in giving responses. The respondents identified in outlier position in the construct map (see the construct maps below) are not reliable. The logit values indicate the position of respondents within the interval of person reliability. This analysis would probably bring a change to the data collection processing in which, so far in current novice research, the validity of respondent is scarcely considered.

Table 2.
Summary statistics of person reliability (N=62)

No_Types of perception	Person reliability	Mean	S.D	Separation (person)	INFIT	OUTFIT			
						MNSQ	ZSTD	MNSQ	ZSTD
1	Perceived usefulness	0.83	1.47	0.91	2.24	1.01	-.2	.99	-.2
2	Ease of use	0.88	1.36	1.40	2.66	1.00	.0	.97	-.1
3	Behavioral intention	0.67	1.73	1.58	1.73	1.04	.0	.98	-.1

**Note: Generated from RASCH analysis*

Table 2 illustrates the summary of person reliability indicating the overall quality of participants in giving responses. The measurement of person reliability plays a critical role in determining certain participants whether or not they are consistent in giving responses. In some cases of measurement, say it the classical testing theory (CTT), the person reliability is not mainly considered and measured. There were 61 people participated in an online survey via Google forms http://goo.gl/forms/ZqDPjOaqjB. Both *PU* and *EoU*, the person reliability (>0.81) indicates a positive trend on respondent consistency in giving responses meaning the participants are mostly reliable while behavioral intention shows 0.67 meaning the participants are fairly reliable (≥0,67). Overall, it can be seen that the average scores of participants' logits are 1.47 (*PU*), 1.36 (*EoU*), and 1.73 (*BoI*) meaning that they, in general, have a strong perception of the implementation of the moodle-based e-learning platform (>0.0 logits). The person separation values indicate the groups of respondents' perception in which the level of perception is identifiable and predictable. The values of person separation are shown higher than the mean score of logit meaning the participants have the high and strong perception (*PU*: 2.34, *EoU*: 2.66, and *BoI*: 1.73). To also measure the number of perception group (layers), the calculation can be done more detail as follows:

Perceived usefulness (PU) $H = \frac{[(4x2.4)+1]}{3} = 3.53$

Ease of Use (EoU) $H = \frac{[(4x2.66)+1]}{3} = 3.88$

Behavioral Intention $H = \frac{[(4x1.73)+1]}{3} = 2.64$

There are four groups (layers) of respondents' perception in *PU and EoU (very strong, strong, weak, and very* weak), and three groups in *BoI (very strong, strong, and weak)*. The group of perception can be seen in the construct map of *PU, EoU,* and *BoI (see figure 1, 2, and 3)*. The quality of the total respondents/participants can also be seen through the values of INFIT and OUTFIT scores. The standard value in RASCH for INFIT MNSQ and OUTFIT MNSQ is 1.0 while INFIT ZSTD and OUTFIT ZSTD is 0.0. A healthy trend is shown in the above table 1 since the values of INFIT and OUTFIT MNSQ are 1.01 *(PU),* 1.00 *((EoU),* and 1.04 *(BoI)* meaning the quality of respondents is good. The similar trend is also shown on the INFIT and OUTFIT ZSTD values.

Table 3.
Summary statistics of item reliability (41 items)

No_Types of perception	Item reliability	Mean	S.D	Separation (item)	INFIT	OUTFIT			
						MNSQ	ZSTD	MNSQ	ZSTD
1	Perceived usefulness	0.98	.00	1.37	6.45	.98	-.3	.99	-.2
2	Ease of use	0.98	.00	1.48	6.79	.98	-.2	.97	-.3
3	Behavioral intention	0.97	.00	1.42	5.50	.96	-.4	.98	.1

**Note: Generated from RASCH analysis*

Table 3 illustrates the summary of item measured (42 items) outlining the item reliability, mean, standard deviation, separation, and INFIT/OUTFIT values. Regarding the item measurement, it is important to investigate whether or not the items are reliable and measurable. The item reliability of the three domains of perception measurement remains excellent, reliable, and a good quality of elements since the values of *PU, EoU, and BoI* meet the highest standard value of reliability measurement (>0.94). It can be concluded that the items are measurable since the mean score of Item Logit shows 0.0 (as required in Rasch) of all three domains. The higher the item separation value, the higher the quality of the question. The separation values can also be calculated as follows:

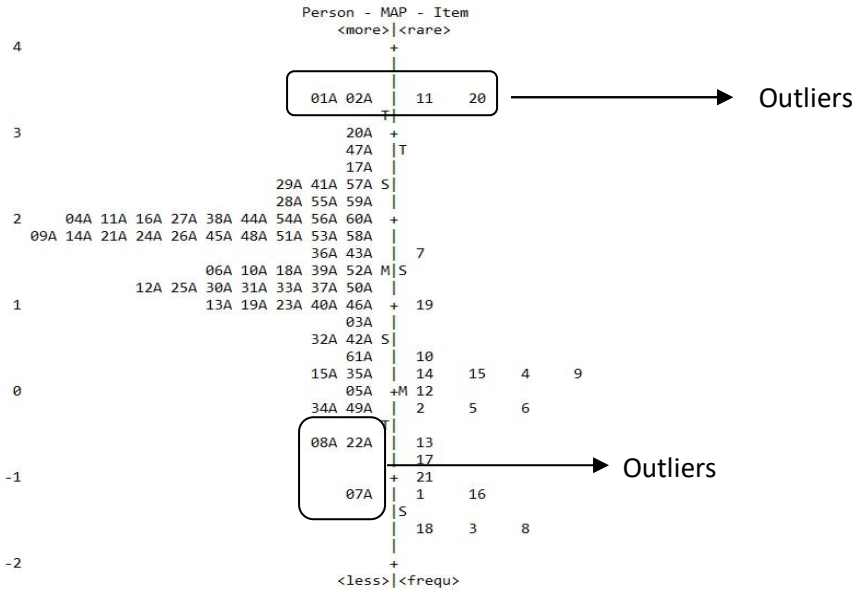
Perceived usefulness (PU) $H = \frac{[(4x6.45)+1]}{3} = 8.93$

Ease of Use (EoU) $H = \frac{[(4x6.79)+1]}{3} = 9.38$

Behavioral Intention $H = \frac{[(4x5.50)+1]}{3} = 7.66$

The separation values resulted from the above calculation show that *PU (8.93), EoU (9.38), and BoI (7.66)* indicating a good quality of items. Another two important properties in Rasch measurement is INFIT and OUTFIT values. The overall quality of questions based on Table 2 above remains good. For the detail of item quality measurement can also be seen through the result of unidimensionality analysis with a standardized residual variance. The unidimensionality analysis evaluates whether the items collectively measure a single underlying construct, ensuring the validity of the instrument. According to the standardized residual variance results, the explained variance by the measures exceeds the recommended threshold, indicating that the items effectively capture the intended construct without significant multidimensional interference. This further confirms the robustness and reliability of the instrument used in assessing the targeted aspects of the study.

Figure 1.
Perceived usefulness



The logit distribution of 61 respondents and 21 items, illustrated in Figure 1, shows both person and item logits. On the left, person logits indicate a strong perception of Moodle's usefulness, while on the right, item logits highlight two outlier items (questions 11 and 20), suggesting these were difficult for respondents to agree with. Additionally, respondents 01A and 02A are identified as outliers due to unreliable responses, with others like 08A, 22A, and 07A showing inconsistent patterns. These outliers, both person and item, are discussed further in this article (see discussion).

Figure 2.
Ease of use

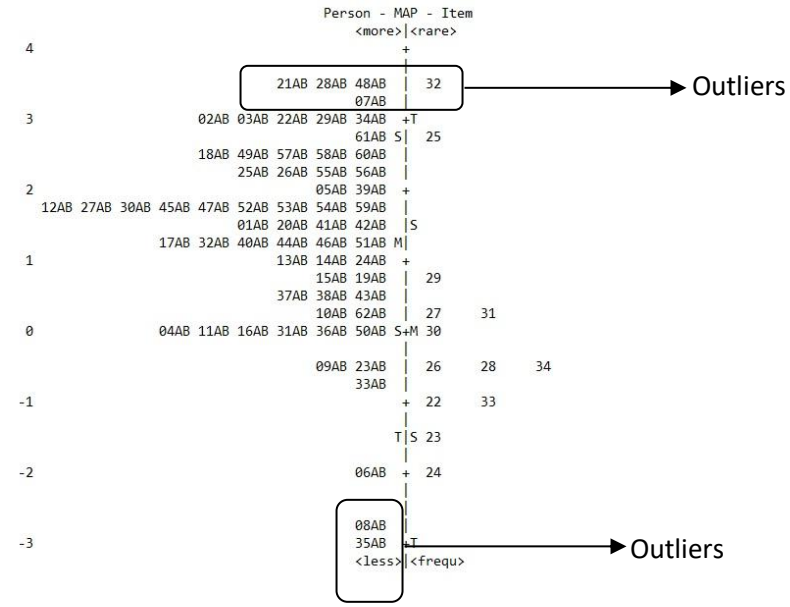


Figure 2 shows the construct map of student perceived ease of use as well as the distribution of logit values both person and item. The distribution of Logit values indicates a strong perception of participants towards the implementation of moodle-based e-learning platform. It can be seen from the map that person 21AB, 28AB, 48AB, and 07AB are outliers meaning that those participants are not reliable in giving responses on the questionnaire (more extreme person). Besides that, less extreme persons are also identified since 06AB, 08AB, and 35 AB as outliers. On the other hand, item 32 is identified as outlier meaning that the item is too difficult to be understood and agreed by the participants. The further analysis will be outlined in this article (see the discussion).

Figure3.
Behavioral intention

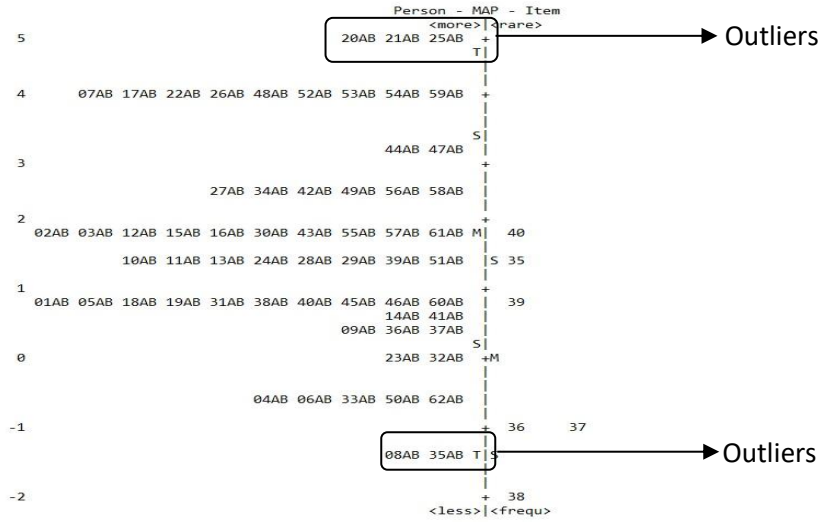


Figure 3 illustrates the behavioral intention as well as the distribution of logit values both person and item. 61 respondents participating in the survey gave responses on six items provided in the questionnaire. The result shows that the distribution of Logit values indicates a strong perception of student behavioral intention towards the implementation of moodle-based e-learning platform. Although a strong perception indicates a positive trend, three persons (20AB, 21AB, and 25AB) are identified as outliers meaning, those participants are not reliable in giving responses on the questionnaire. Item 38 is the most helpful item in which all participants agreed on this item.

DISCUSSION

The analysis through RASCH measurement model using WINSTEP provides a vivid description of student perception towards the implementation of moodle-based e-learning platform in ELT (Bond & Fox, 2015; Mcnamara & Knoch, 2012). The distribution of logit values within the construct map has revealed some evidence of both person and item reliability. Although both person and item are measured reliable and valid, some issues should come to a discussion on how further research deals with them. This debate will

explore the outlier's logit values both person and item. Based on the RASCH measurement model, the distribution of logit values determines the level of perception of the measured person and item as well as both outliers' person and item. The outliers' position (more or less) are considered as weak person meaning the respondents are inconsistent in giving responses, and so are the items.

Research on Moodle-based e-learning platforms using the RASCH measurement model highlights reliability and validity while identifying areas for improvement. Mahmud and Porter (2015) analyzed probability concepts, revealing varying difficulty levels and outliers (Mahmud & Porter, 2015). Yusuf et al., (2020) demonstrated moodle's feasibility in structured physics e-learning environments. Moreover, Rahim et al., (2024)applied RASCH in adaptive testing, highlighting its role in ensuring item reliability. These studies emphasize RASCH's utility in refining moodle-based e-learning systems.

Table 4.
Summary of both outliers' logit person and item

Types of perception_Outliers person (more)	Outliers person (less)	Outliers items (rare)	Outliers items (frequent)	
Perceived usefulness	01a,02a	08a, 22a, 07a	11, 20	-
Ease of use	21ab,28ab, 48ab,07ab	06ab,08ab, 35ab	32	-
Behavioral Intention	20ab,21ab, 25ab	-	-	-

Table 4 shows the summary of both outliers' Logit person and item outlining the unreliable person (participants) and wrong items. The outliers (person) should be excluded from measurement since the persons are not reliable. Items 11, 20 (*PU)*, and 32 *(EoU)* outlines the outliers in which those items are not entirely understood and comprehended by the respondent, and or the items are too difficult to be agreed. Based on RASCH measurement model, those items should be omitted, replaced, and/or modified to validate them as items that properly measure. The distribution of outliers' person across the three domains of investigation shows that 15 respondents out of 62 were unreliable in giving responses to the questionnaire. The result of measurement suggests these people not to participate in the process of future data collection. This type of measurement will have implication for research practices such as the selection of research participants, the number of representing participants, instrument validation, and the accuracy of predictable responses. Regarding moodle application based on RASCH measurement model analysis, the level of perception of each respondent is seen clearly within the construct map and their perceived usefulness, ease of use, and behavioral intention towards the items of the questionnaire. Therefore, to measure the perception, it is suggested not to rely on classical test theory (CTT) which treats the data obtained from questionnaire as an integer. The data is a symbol representing the level of agreement which cannot go further into the arithmetic calculation. The standard of

perception should be as equal interval values ranging from the lowest to highest logits. It is contradicted with the CTT perspective in which the data obtained from the Likert-based questionnaire is commonly considered as an integer and can directly go into the arithmetic calculation.

A myriad of technological tools that can be used in and out of the classroom context has opened more opportunities for EFL teachers to incorporate and integrate them into the language learning activities. Beside of the many moodle drawbacks, the platform has several advantages in language learning provide an online learning environment as well as the online materials, resources, and interaction. Sontheimer (2011) has outlined the importance of moodle in language teaching and learning including the moodle activities for the language classroom. Based on the interview, students put emphasis on several drawbacks relating to the e-learning accessibility such as log-in password system, site performance, and online voice recording. The e-learning password system, by default, requires a complex combination of letters, numbers, and non-alphanumeric character that made the users difficult to memorize it. Consequently, the student could not log into the platform and forced them to re-register another new account. Besides that, the site performance also had a slow response to the users in which the platform contains several graphics, images, and videos resulting the server responded slower to load the pages. The cause is merely the limited internet bandwidth in which the platform has a slow response on hand-held devices such as a smartphone, tablet, and iPad that the students mostly use. Further investigation in this area should also involve mobile-assisted language learning (MALL) expertise to integrate the platform into the mobile version. Lastly, the e-learning plug-in called PodLL (online sound recording plug-in) didn't work at all due to the compatibility issue.

CONCLUSION

This research investigated student perceptions of Moodle-based e-learning implementation in English Language Teaching (ELT). Focusing on three measured domains—perceived usefulness, ease of use, and behavioral intention—the findings reveal that students generally have positive perceptions of the platform (see Tables 1 and 2, as well as the construct maps). The e-learning platform provides significant benefits, enabling students to work more efficiently and cost-effectively. For example, assignments can be submitted digitally, eliminating the need for printing. The study emphasizes the importance of measuring student perceptions using advanced methods, as demonstrated by the RASCH analysis conducted through WINSTEP software. This analysis provided detailed construct maps, highlighting respondents' Logit values and their responses to individual questionnaire items. These values, spanning an interpretable range from less to more favorable perceptions, offer valuable insights into both person and item measures. To enhance the instructional value of Moodle, future research should prioritize improving the platform's instructional design, site performance, and plug-ins, as these areas were identified as less favorable. Additionally, further work is needed to advance the platform's capabilities in promoting student learning and engagement. Overall, Moodle-based e-learning in ELT has

been perceived as useful, effective, and easy to use. However, continued development and exploration in this area are essential to optimize its potential.

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CONFLICT OF INTEREST

No Conflict of Interest Reported by Author(s)

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