LEARN Journal: Language Education and Acquisition Research Network
ISSN: 2630-0672 (Print) | ISSN: 2672-9431 (Online)
Volume: 17, No: 1, January – June 2024

Language Institute, Thammasat University
https://so04.tci-thaijo.org/index.php/LEARN/index

Developing an Online Formative Assessment Instrument for Listening Skill through LMS

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APA Citation:
Slamet, J., & Mukminatien, N. (2024). Developing an online formative assessment instrument for listening skill through LMS. *LEARN Journal: Language Education and Acquisition Research Network*, *17*(1), 188-211.

Received
08/05/2023

Received in revised form
02/09/2023

Accepted
15/09/2023

ABSTRACT

Traditional methods of assessing listening skills in language learners suffer from drawbacks such as subjectivity, inconsistency, and time-intensive grading processes. To overcome these limitations, we introduce an innovative assessment instrument designed to efficiently and effectively evaluate students' listening skills while offering instructors a dependable means to track progress. This study proposes the development of an online assessment instrument tailored to measure language learners' comprehension of spoken language. The two instruments incorporate a questionnaire and a variety of question formats, each gauging students' grasp of spoken discourse across diverse contexts and accents. Additionally, the online assessment assesses their proficiency in identifying main ideas, supporting details, and inferred implications within spoken communication. Accessible through a dedicated learning management system (LMS) platform available at http://lms.elsida.ac.id/, this instrument empowers instructors with a robust mechanism to gauge their students' advancement. By providing a thorough assessment of listening skills, the instrument stands as a powerful resource for

educators seeking to drive ongoing improvement. The study's findings highlight how this assessment instrument can improve language learning through ongoing feedback. Through ongoing enhancements and testing in language learning contexts, the instrument contributes to a more effective evaluation of listening skills in language education.

Keywords: formative assessment, listening skill, LMS, online assessment instrument

Introduction

Assessing language proficiency is crucial for language teaching and learning because it provides valuable feedback on learners' progress. Assessing language skills, such as speaking, reading, and writing, is essential in understanding learners' overall language abilities and developing appropriate teaching strategies (e.g., Chen & Zhang, 2019; Fulcher, 2015; Kusumawati, 2020; Ngo, 2019; Tanewong, 2019). However, assessing listening skills is particularly important as it is a fundamental aspect of effective communication and involves a range of cognitive processes and sub-skills (e.g., Fulcher, 2015; Ngo, 2019). Traditional assessment methods for assessing language learners' listening skills, such as face-to-face interactions and interviews, can be time-consuming, resource-intensive, and subject to bias and inconsistencies (Fulcher, 2015). Moreover, learners' anxiety and nervousness during the assessment may affect their performance, leading to inaccurate results. In addition, the limitations of traditional assessment methods have become more pronounced during the COVID-19 pandemic, as face-to-face interactions are restricted, and educators need scalable and accessible assessment tools (e.g., Brown et al., 2015; Sandvik et al., 2021). With the integration of technology in language teaching and learning, online listening assessments have emerged as a promising alternative to traditional face-to-face assessments; however, there is a need to develop and validate reliable and valid online listening assessment instruments (Ferreira et al., 2019). In response to these challenges, there has been an increasing interest in online assessment tools, particularly through LMS.

LMS is a platform that simplifies the creation, management, and delivery of educational content online, enabling universities to globally administer educational information (Kashora et al., 2016; Mpungose, 2020; Sabharwal et al., 2018; Turnbull et al., 2021). It facilitates interaction and assessment (Kattoua et al., 2016; Padayachee et al., 2018), and offers benefits like flexibility, accessibility, and instant feedback (Radia, 2019). However, literature exploring the development and validation of online assessment

tools for listening skills via LMS remains limited (Padayachee et al., 2018). Online assessment, while advantageous, presents challenges such as the absence of nonverbal cues and contextual information essential for listening comprehension (Fulcher, 2015). Additionally, technology requirements may hinder those with limited resources or technical issues (Bai et al., 2016; Dai et al., 2022), and concerns about authenticity and validity persist (Ferreira et al., 2019).

In order to fully realize the potential advantages of online LMS assessment over traditional assessment, challenges such as tool validity and reliability must be addressed. The integration of technology has revolutionized language learning and assessment, especially online assessment, offering accessibility, flexibility, and instant feedback (Mpungose, 2020; Sabharwal et al., 2018). As a vital resource for language education, the LMS streamlines learning resource management, assessments, and communication (Padayachee et al., 2018), yet a gap exists in the literature regarding the validation of an online assessment instrument for listening skills through LMS (Bervell & Arkorful, 2020). To bridge these gaps, this study aims to develop an online assessment tool for listening skills via LMS, ensuring accurate and immediate feedback for learners and instructors. Specifically, this research seeks to answer the following formulated research questions:

1. What are the key features and requirements of an effective online assessment instrument for listening skills through LMS?
2. How effective is the developed online assessment instrument for listening skills through LMS?

Therefore, the current study aims to fill the absence of the existing literature by developing and validating an online assessment instrument for listening skills through LMS. This instrument is designed to evaluate students' comprehension capabilities, concurrently offering formative feedback to support continuous learning and enhancement. By evaluating students' ability to understand spoken language in different contexts and accents, and identify main ideas and supporting details, the instrument aims to assess students' listening skills effectively and prepare them for success in academic and professional settings.

Literature Review

Language assessment, listening skills and its importance in language learning

Language assessment is a multifaceted process, intricately influenced by its type, purpose, target audience, and context (Wei et al., 2021). The evaluation of language skills offers valuable insights for both learners and instructors, spotlighting its significance in language learning research. Among the quartet of language abilities crucial for effective communication and language acquisition, listening has gained paramount importance (Mulyadi et al., 2021). Yet, the intricacies of auditory perception and the diverse cognitive intricacies entailed in different listening tasks have posed challenges for its precise quantification (Oanh & Minh, 2018). Language learning research has underscored the pivotal role of assessing listening skills. Rukthong (2021) highlights listening comprehension's centrality in real-life communication, while various studies have extolled how listening assessment fosters language learning (Ngo, 2019). By gauging listening skills, students can pinpoint their strengths and areas for improvement, enabling teachers to tailor instruction to individual needs.

Recently, the assessment of listening skills in language acquisition has received heightened attention. Listening proficiency entails decoding linguistic and non-linguistic cues in spoken language comprehension (Hwang et al., 2017). Hence, a comprehensive assessment of listening skills encompasses not just comprehension, but also considers the ability to accurately perceive and distinguish accents, vocabulary, and grammar in spoken language. The role of language assessment extends beyond evaluation, shaping the contours of language teaching and learning processes. Through its insights, learners and teachers can identify strengths, weaknesses, and set meaningful language learning goals (Brown et al., 2015; Panadero et al., 2016). Additionally, language evaluation informs curriculum design and pedagogical strategies, aligning instructional strategies with learners' preferences and requirements (Brown et al., 2015). Thus, the cultivation of effective language teaching and learning hinges on adeptly assessing listening skills, empowering instructors to address students' needs and foster language development. This process culminates as assessment feedback empowers learners to refine their language prowess.

Online assessment in LMS and its role in assessment

The surge in technology has popularized online language assessment, especially within the LMSs. The integration of LMS empowers educators to seamlessly craft, administer, and oversee language tests in digital spaces. This mode of assessment has garnered significant attention in language education for its potential to elevate language learning and evaluation practices. Language instructors can harness LMS to orchestrate assessments, monitor progress, and promptly provide feedback, nurturing a reflective and evolving

learning process (Bervell & Arkorful, 2020; Kerimbayev et al., 2017). However, despite its merits, LMS-based online assessment is not without its shortcomings. The absence of face-to-face interactions and proctoring mechanisms exposes vulnerabilities to cheating and plagiarism (Masito et al., 2021; Xin et al., 2021). Moreover, multimedia components employed in LMS listening assessments may falter in emulating real-life listening scenarios, potentially compromising assessment authenticity (Bervell & Arkorful, 2020). Issues of fairness and accessibility loom over learners challenged by unstable internet connections or limited technology access. Another nuance arises from LMS's tendency to dissect language skills rather than holistically gauge integrated language utilization, potentially underscoring learners' competencies and communicative prowess (Kerimbayev et al., 2017).

LMS-driven online assessment offers manifold advantages, yet coexists with its share of challenges. As learners may resort to external resources or collaboration during assessments, concerns about cheating or plagiarism emerge (Panadero et al., 2016). Strategies such as randomized question sequencing or deploying question pools could mitigate this concern (Chapelle & Voss, 2019). Technical glitches stand as another potential stumbling block, influencing the reliability and validity of LMS-based online assessments. Connectivity issues or hardware and software complications may thwart seamless assessments. Instructors can mitigate these challenges by ensuring learners have access to the necessary technology and clear assessment guidelines. In contingencies involving technical difficulties, educators can resort to backup or alternative assessment measures. While online LMS evaluations deliver swift feedback, their ability to comprehensively reflect learners' linguistic aptitude and progress is limited. To attain a more holistic comprehension of learners' language competence, educators might need to complement online assessments with performance-driven assessments (Xin et al., 2021).

Existing online listening assessment instruments and a proposed instrument assessment through LMS

Numerous online listening assessment instruments have been devised to gauge language learners' listening skills across diverse contexts. Prominent examples include the TOEFL iBT (Test of English as a Foreign Language internet-based test) and the Pearson Test of English Academic (PTE Academic), frequently employed for English language assessment (Fulcher, 2015). These instruments have undergone validation using item response theory and Rasch analysis to gauge language learners' listening proficiency (Fulcher, 2015). Despite their validity, conventional online listening assessment instruments often lack engagement and authenticity (Lin, et al.,

2017). Recent scholarship, however, has introduced novel online listening assessment instruments incorporating authentic materials and interactive tasks to address these limitations (Hwang et al., 2017; Mulyadi et al., 2021; Oanh & Minh, 2018). These innovative instruments present more accurate and dependable assessments of language learners' listening skills in contrast to conventional counterparts (Oanh & Minh, 2018). In parallel, the utilization of LMS for delivering and evaluating language learners' listening skills remains an underexplored domain, despite its extensive integration into language education (Ferreira et al., 2019). This highlights a notable void in the literature regarding the creation and validation of an online listening assessment instrument leveraging LMS as a platform. Such an instrument has the potential to substantially enhance the efficiency and efficacy of language instructors in measuring language learners' listening proficiencies. Moreover, the application of LMS in language assessment can harmoniously fuse evaluation and instruction, facilitating personalized and adaptive language learning experiences (Lin, et al., 2017). Yet, the full scope of online listening assessment's potential through LMS remains largely untapped, presenting a research gap that this study aims to address. The endeavor to establish and validate an online listening assessment instrument within the LMS framework holds the promise of equipping language instructors with a more streamlined and comprehensive approach to evaluating language learners' listening skills, thereby nurturing individualized and adaptive language learning. Thus, this study places pivotal importance on fully comprehending the untapped potential of this approach in both language assessment and instruction.

Methodology

The purpose of this study was to develop an online assessment instrument for measuring students' listening skills. The proposed instrument was designed using the research and development (R&D) applying ADDIE model, which involves five stages: Analysis, Design, Development, Implementation, and Evaluation. Each stage is described below.

Analysis

During the analysis phase, we systematically identified learning objectives, assessed the target audience, and considered constraints and requirements for the assessment. We examined the current teaching and learning environment, evaluated available technology for seamless integration into the LMS platform, and based on these insights, developed precise product specifications for the proposed online assessment instrument. This process ensured alignment with learning goals and the intended audience

while navigating any potential challenges. The product specifications of the proposed online assessment instrument were developed based on the analysis results. These specifications include:

• *Format:* The assessment instrument was an online assessment that could be accessed by students and educators through the LMS platform.

• *Test items:* The assessment instrument consisted of various types of questions that assess students' listening comprehension abilities, including multiple-choice, fill-in-the-blank, and short answer. 40 questions were designed to measure students' understanding of spoken language in different contexts and accents, as well as their ability to identify main ideas, supporting details, and implications in spoken discourse.

• *Time limit:* The assessment instrument was timed, with a set duration that allowed students sufficient time to complete the assessment without causing undue stress or pressure. The duration was determined based on the number and complexity of questions and was designed to balance the need for comprehensive assessment with the need to respect students' time and cognitive resources.

• *Scoring:* The assessment instrument used a reliable and valid scoring system that provides accurate and consistent scores across different test-takers and administrations. The scoring system is based on established listening comprehension standards that were transparent to students and educators.

• *Feedback:* The assessment instrument provided students with detailed feedback on their listening skills, including areas for improvement and specific suggestions for how to enhance their abilities. Feedback is formative, providing ongoing support and guidance to students as they work to improve their listening skills. This assessment instrument offers flexibility, allowing it to be utilized in the form of both summative and formative assessments. Feedback is given to let the learners understand the errors.

• *Accessibility:* The assessment instrument is designed to be accessible to students with diverse backgrounds and varying levels of technology access. The assessment instrument is compatible with commonly used assistive technologies and adhered to established accessibility guidelines to ensure equal opportunity for all students to demonstrate their listening skills.

• *Security:* The assessment instrument used appropriate security measures to protect against cheating and unauthorized access to test materials. Measures may include randomized test questions, secure browser environments, and monitoring tools to detect irregularities or suspicious activity during the assessment.

Design

During the design stage of the ADDIE model, the assessment format and content were developed in detail. This includes the types of questions, such as multiple-choice, fill-in-the-blank, and short answer questions, and the level of difficulty and number of questions. The design stage also involved creating a scoring system that would align with the learning objectives and provide meaningful feedback to students. It is essential to ensure that the assessment is designed to accurately measure students' listening comprehension abilities in various contexts and accents. The design should also consider the level of cognitive load the test puts on the students, ensuring that the test is neither too easy nor too difficult, and providing a good balance between testing a student's comprehension skills and reducing undue stress.

Development

The development stage of the ADDIE model involved creating the assessment items and integrating them into an LMS-compatible platform. The creation of assessment items is one of the most critical aspects of the development stage, and care must be taken to create questions that accurately assess students' listening comprehension skills. It is important to pilot-test the assessment to ensure that it is functioning correctly, and that the assessment items are valid and reliable. The final product was a fully developed online listening assessment instrument for measuring language learners' listening skills. The LMS platform at http://lms.elsida.ac.id/ allowed students and educators to take the online assessment. The assessment assessed students' listening comprehension with multiple-choice, fill-in-the-blank, and short answer questions. 40 questions assessed students' ability to identify primary ideas, supporting details, and consequences in spoken discourse in varied circumstances and accents. The assessment design prioritized realistic time limits for students, ensuring completion without haste. Consistency and accuracy in scoring were maintained across students and administrations. Students received comprehensive feedback encompassing improvement areas and precise suggestions for their listening skills. The instrument's development prioritized accessibility for diverse backgrounds and technology access. To prevent unauthorized access and cheating, safeguards such as randomized questions, secure browser settings, and vigilant monitoring for irregularities were implemented.

Implementation

The implementation stage involved administering the assessment to the target participants through the LMS platform as a field testing consisting of 25 undergraduate students who were enrolled in the "Advanced Listening" course. The assessment was administered to the sixth-semester students enrolled in the English Language Study Program at STKIP PGRI Sidoarjo. These participants, with language proficiency ranging from intermediate to advanced levels, provided valuable insights into the assessment instrument's implementation.

The course, designed to refine and elevate students' listening skills, aims to cultivate a profound understanding of various linguistic nuances, accents, and contexts. By engaging in intricate listening exercises and real-life scenarios, participants are empowered to discern intricate details, main ideas, and underlying implications within spoken discourse. The selection of this course's advanced level underscores the heightened expectations and challenges it presents, rendering it an apt context for evaluating the effectiveness of the assessment instrument. To ensure meticulous evaluation, the assessment process is carefully timed, while monitoring tools are employed to accurately detect and address any irregularities or signs of suspicious activity. Moreover, the security of the assessment instrument itself remains paramount. Rigorous measures are implemented to prevent any potential cheating or unauthorized access to the assessment materials, safeguarding the integrity of the evaluation process.

Evaluation

The evaluation phase consisted of scrutinizing assessment outcomes to gauge alignment with learning objectives. Valuable input from students was gathered through a specially designed questionnaire distributed within a designated WhatsApp group (WAG), facilitating the identification of areas for potential improvement. Essential to this phase was the alignment of the assessment with objectives and the provision of substantive feedback, empowering students to identify strengths, weaknesses, and strategies for enhancing their listening skills.

The validation process involved subject matter experts who critically reviewed assessment items for their validity and relevance. In tandem with these efforts, it was essential to develop the evaluation questionnaire specifically tailored for distribution within the WAG. Rigorous data analysis techniques were employed to extract meaningful patterns and trends from the collected responses. The culmination of these processes, combined with the

involvement of four subject experts and adherence to criteria outlined in Table 1, robustly affirmed the assessment's validity and product advancement level.

Table 1

Validity Criteria

Range Validity	Level of Validity
85.01% - 100%	Very valid, or can be used without modification
70.01% - 85.00%	Valid, or can be used with minor revisions
50.01% - 70.00%	Less valid or should not be used because it requires extensive revision
01.00% - 50.00%	Invalid or not permitted to be used

Adapted from Masito et al. (2021)

Results

Traditionally, there have been problems with subjectiveness, inconsistency, and time-consuming grading in traditional assessment methods for evaluating listening abilities in language instruction. In response to these barriers, the current research sought to create a formative assessment instrument for use in an LMS that would gauge students' capacities of comprehending spoken language. This instrument was developed to address some of the shortcomings of conventional evaluations by giving instructors and students access to accurate and useful information on their listening abilities.

RQ1: Key Features and Requirements of an Effective Online Assessment Instrument for Listening Skill through LMS

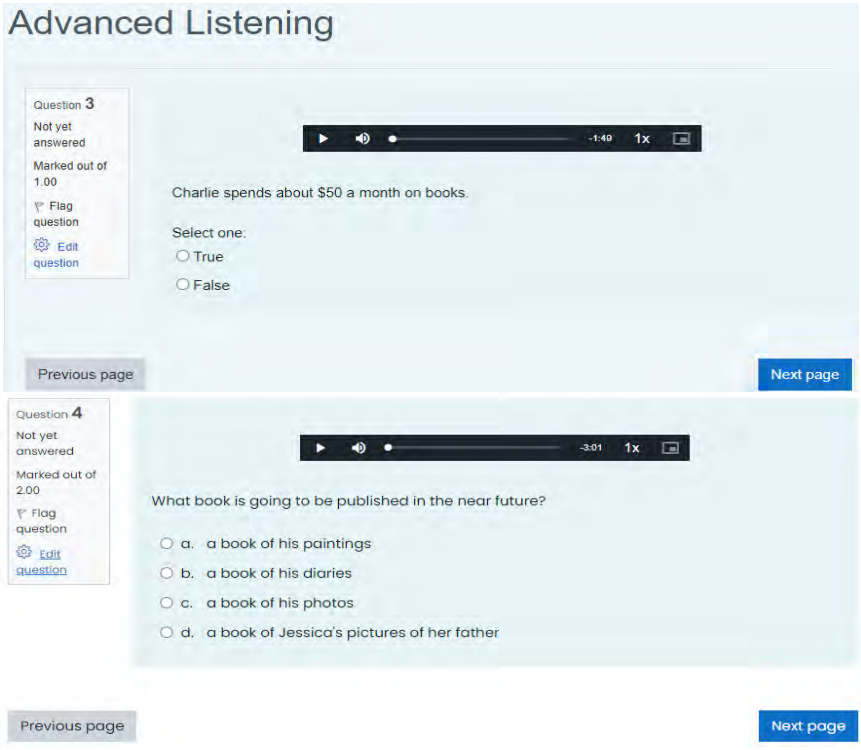
In the analysis phase, our approach was systematic and thorough. We aimed to identify clear learning objectives, evaluate the intended target audience, and meticulously account for constraints and prerequisites essential to the assessment's effectiveness. Our investigation extended to the present landscape of teaching and learning, coupled with a comprehensive evaluation of available technologies that could be seamlessly incorporated within the LMS platform. Grounded in these discernments, we meticulously crafted precise product specifications for the envisaged online assessment instrument. This comprehensive process effectively aligned the assessment instrument with intended learning objectives and catered to the unique

characteristics of the target audience while adeptly navigating any potential challenges that might arise. The resulting product specifications elegantly summarized the culmination of our analysis, ensuring a robust foundation for the subsequent stages of development. In order to ensure that it is effective, an online assessment instrument for measuring listening abilities through an LMS should integrate crucial elements and meet particular standards. These needs and features include the following:

a) *Diverse question types:* The instrument consisted of 40 questions, categorized into three formats: 20 questions were multiple-choice, 13 were fill-in-the-blank, and 7 were short answer questions (true/false). This assessment instrument allows for comprehensive assessment of students' listening abilities, assessing comprehension, and the ability to identify main ideas, supporting details, and implications in spoken discourse. The sample of the items are presented on the following figure.

Figure 1

Samples of the Questions Types

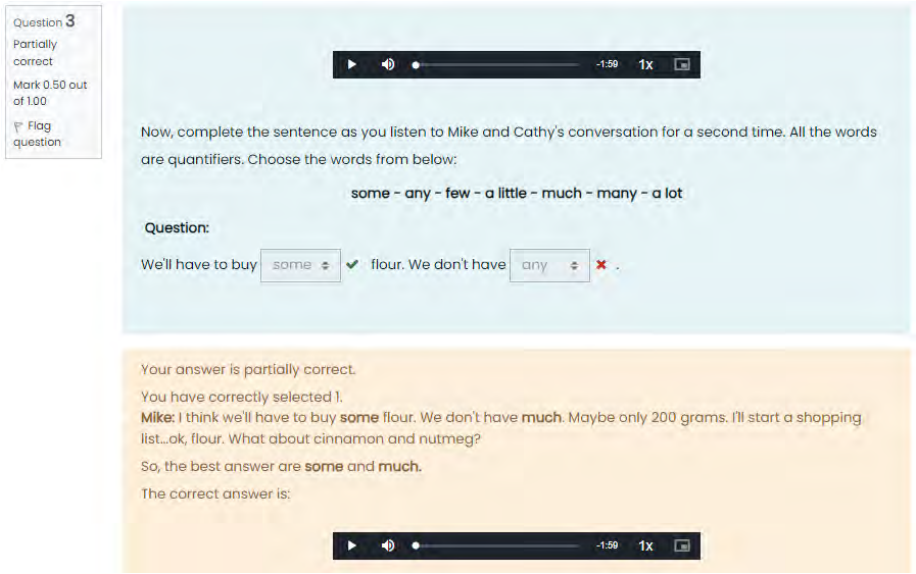


b) *Authentic audio materials:* To enhance the authenticity of the assessment, the instrument utilized real-world audio materials, such as interviews, conversations, podcasts, or recordings of speeches. These materials represent various contexts, accents, and speech patterns to provide students with exposure to different listening scenarios.

c) *Immediate feedback:* Once students have finished the evaluation, the instrument should give them immediate feedback that is both general and specific. This feedback needs to emphasize correct answers, explain wrong responses, and make improved suggestions. Students are better able to recognize their areas of strength and weakness when they are provided with immediate feedback, which also makes for more efficient and effective skill development. The sample of immediate feedback can be seen on the following figure.

Figure 2

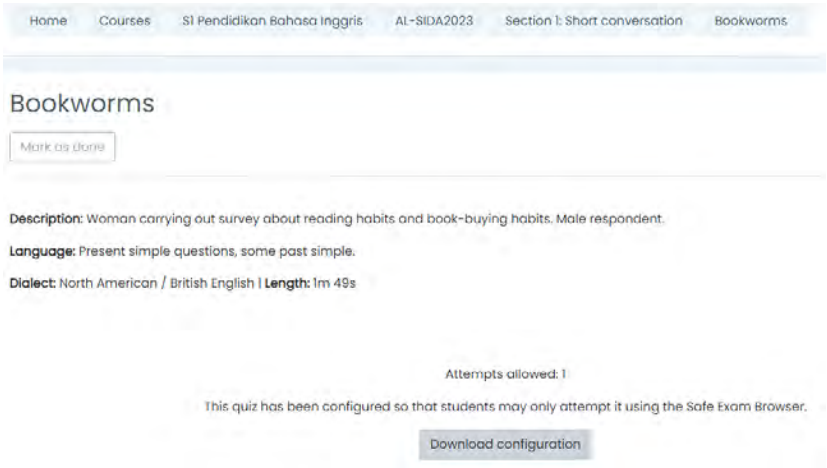
Sample of Immediate Feedback



d) *Security measures:* To maintain the integrity of the assessment, the instrument incorporated security measures. These included randomizing question orders, implementing time limits, and utilizing secure authentication protocols such as using integration of *safe exam browser*. By safeguarding against cheating and unauthorized access, security measures ensure the reliability and fairness of the assessment. The following figure presents the integration of the assessment instrument using *safe exam browser*.

Figure 3

Integration Online Assessment Instrument to Safe Exam Browser



e) *Scoring system:* A well-designed scoring system was a crucial component of the efficient online assessment instrument for measuring listening skills in an LMS. The scoring system offered a consistent and neutral means of gauging students' accomplishments. The scoring system incorporated various elements, such as:

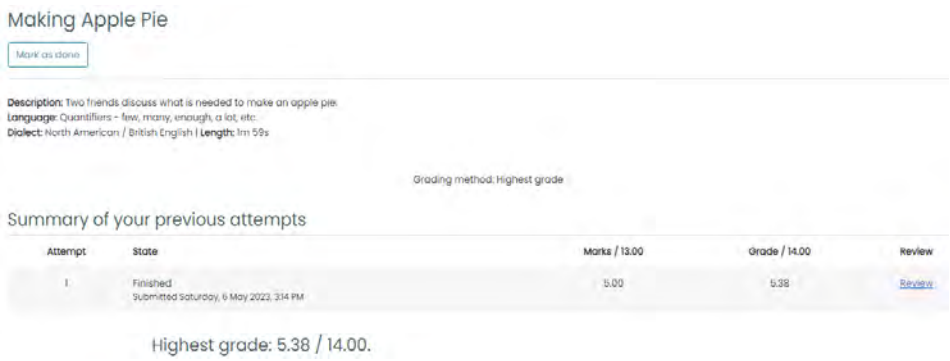
* *Point-based scoring:* Our scoring system takes into account the varying difficulty levels and the significance of each question or question type in evaluating listening skills. This approach is informed by the nuanced design of our listening items, which encompass a range of complexities and focal areas, ensuring a thorough assessment of students' auditory proficiency. Through strategic point allocation, we ensure a balanced reflection of students' skill levels, factoring in both the intricacy of the items and their role in precisely measuring listening abilities.

* *Automated scoring:* It involves implementing algorithms for objective question types, such as multiple-choice or fill-in-the-blank. This ensures efficient and consistent grading while reducing the burden on instructors.

Students are given a thorough breakdown of the grading scale and are aware of exactly how their work is assessed. It is flexible enough to accommodate changes to the assessment tool or evaluation criteria. The following figure presents the example of the scoring system used.

Figure 4

The Scoring System in Product Development



RQ2: Effectiveness of the Developed Online Assessment Instrument for Listening Skills through LMS.

The results of the pilot test were analyzed before the final assessment product development was implemented. A validation report was created to document the validation process and results. As a direct outcome, the recapitulated result of the theoretical validity interpretation for the initial product's material aspects was established in accordance with the validation criteria. This outcome is presented in the subsequent table.

Table 2

Aspects Validity of the Product Materials Interpretation

Aspects	Indicators	Validation of Accomplishment (%)		Average	Criteria
		Validator 1	Validator 2		
Technology	• Accessibility • User-friendly layout • Security	88.70	87.20	87.95	Very valid
Language & Material	• Understandable instructions • Appropriate grammar and structure in used	86.00	86.50	86.25	Very valid

	• Focusing on the topics • Reflecting on course' goals		
	Average	**87.10**	**Very valid**

According to Table 2, the average validity score for the online formative assessment instrument for the "Advanced Listening" course is 87.10, which is considered to be "very valid" and can be used without any modification. This score is based on the assessment provided by technology experts (two experts), who scored it at average 87.95, and language and materials experts (two experts), who scored it at average 86.25. These scores indicate that the assessment tool meets the criteria for validity, and it is now ready for the next step of the research process, which is field testing. This will confirm the findings and provide feedback on the evaluation tool's usability and efficacy. 25 participants completed a closed-ended questionnaire about LMS-implemented online formative assessment. The questionnaire comprised three sections: the usefulness of the assessment instrument through LMS in "Advanced Listening", the accessibility of LMS in supporting assessment, and technology-enhanced independent learning via LMS. The table shows the outcomes.

Table 3

The Results of Questionnaire in the First Section

Helpfulness of the assessment instrument through LMS in Advanced Listening course					
No	**Statements**	**SA**	**A**	**D**	**SD**
1	The assessment instrument through LMS helped me improve my listening skills in the Advanced Listening course.	72% (18)	16% (4)	8% (2)	4% (1)
2	The assessment instrument through LMS helped me understand the listening tasks better in the Advanced Listening course.	64% (16)	32% (8)	4% (1)	0% (0)
3	The assessment instrument through LMS provided useful feedback on my listening skills in the Advanced Listening course.	80% (20)	20% (5)	0% (0)	0% (0)

4	The assessment instrument through LMS helped me prepare for assessments in the Advanced Listening course.	72% (18)	8% (2)	16% (4)	4% (1)
5	Overall, I found the assessment instrument through LMS to be helpful for my learning in the Advanced Listening course.	60% (15)	20% (5)	20% (5)	0% (0)

SA: strongly agree, A: agree, D: disagree, SD: strongly disagree

The survey results indicate that the majority of students in the Advanced Listening course found the assessment instrument through LMS to be helpful. Specifically, 72% of respondents found that the tool helped them improve their listening skills, 64% found it helpful in understanding the listening tasks better, 80% found the feedback provided to be useful, and 72% found it helpful in preparing for assessments. While only 60% of respondents found the tool helpful overall, this still represents a majority of students. Therefore, the assessment instrument through LMS was generally perceived as helpful by the students in the course.

Table 4

The Results of Questionnaire in the Second Section

Accessibility of the use of LMS in facilitating assessment					
No.	**Statements**	**SA**	**A**	**D**	**SD**
6	The assessment in LMS was easy to access.	80% (20)	16% (4)	4% (1)	0% (0)
7	I experienced technical ease while accessing the assessment using the LMS.	60% (15)	24% (6)	8% (2)	8% (2)
8	The assessment in LMS provided clear instructions for completing listening tasks.	68% (17)	20% (5)	8% (2)	4% (1)
9	The assessment in LMS interface was user-friendly.	56% (14)	16% (4)	16% (4)	12% (3)

10	Overall, I found the assessment in LMS to be accessible and easy to use in the Advanced Listening course.	60% (15)	32% (8)	4% (1)	4% (1)

Based on the survey results, it appears that the use of LMS to facilitate assessment was generally perceived as accessible and easy to use by the students in the Advanced Listening course. The majority of respondents strongly agreed or agreed that the assessment in LMS was easy to access (80%) and provided clear instructions for completing listening tasks (68%). However, a significant majority of respondents experienced technical difficulties while accessing the assessment using the LMS (60% agreement) and found the LMS interface to be less user-friendly (56% agreement). Overall, the survey results suggest that the use of LMS to facilitate assessment in the Advanced Listening course was perceived as accessible and easy to use by the majority of students. However, it is important to address the technical difficulties and interface issues experienced by some students to further improve the accessibility and usability of the assessment instrument.

Table 5

The Results of Questionnaire in the Third Section

Independent learning in the context of technology-enhanced via LMS					
No.	**Statements**	**SA**	**A**	**D**	**SD**
11	I felt confident using technology for learning in the Advanced Listening course.	56% (14)	32% (8)	12% (3)	0% (0)
12	The LMS helped me become more comfortable with using technology for learning in the Advanced Listening course.	64% (16)	16% (4)	20% (5)	0% (0)
13	The LMS provided opportunities for me to learn independently in the Advanced Listening course.	64% (16)	20% (5)	16% (4)	0% (0)
14	The LMS encouraged me to take responsibility for my learning in the Advanced Listening course.	60% (15)	32% (8)	4% (1)	4% (1)

15	Overall, I prefer using technology-enhanced learning over traditional classroom-based learning for my future courses.	76% (19)	20% (5)	4% (1)	0% (0)

Based on the survey results, it appears that the use of LMS in facilitating assessment was generally well-received by students in the Advanced Listening course. The majority of respondents found the assessment in LMS easy to access (80%), providing clear instructions (68%), and being user-friendly (56%). However, some technical issues were reported by 60% of respondents, indicating a need for technical support to improve the user experience. Overall, the results suggest that the LMS-based assessment instrument was perceived as helpful and accessible by the students, which may have contributed to their positive experience and performance in the course.

Discussion

If they are to be effective, specific elements should be included in any online assessment instruments for listening skills administered using LMS. The capacity to give students precise feedback on their performance, including individualized suggestions for how to improve, is a crucial element. Several methods exist for accomplishing this, including automatic feedback and input from peers or teachers. The current research findings are relevant to the previous studies which highlight that students learn more when they receive constructive feedback after an assessment (Ferreira et al., 2019; Panadero et al., 2016). Assessing not just comprehension but also inference and analysis is a key characteristic of good online assessment tools for listening skills. A wide variety of evaluation tools, including multiple-choice, short-answer, and essay questions, can help with this. Having a wide variety of item types can enable a thorough and reliable evaluation of students' listening skills (Hwang et al., 2017). Designing accessible and usable online assessment instruments for listening skills through LMS is also essential for their efficacy. This includes giving candidates easy-to-understand directions, a straightforward interface, and many access points from which to take the test. All students should be given the same amount of time to finish the test, and there should be as few technological difficulties as possible.

Listening assessments administered online through an LMS should also be designed with course goals and learning outcomes in mind. This means that the evaluation needs to be tailored to test for the precise set of competencies that are intended to be developed throughout the duration of the course. To ensure validity and reliability in terms of measuring students' learning outcomes, it is important that assessments be aligned with course

goals (Panadero et al., 2016). An effective online assessment instrument for listening skills through LMS will have the following features and requirements: the ability to provide detailed feedback; the ability to assess multiple aspects of listening; an accessible and usable design; and alignment with course objectives and learning outcomes. By using these components, teachers may create tests that accurately assess their students' listening abilities and potentially boost their students' learning (Mulyadi et al., 2021).

The findings of the study indicate that the use of LMS in facilitating assessments for the "Advanced Listening" course has a positive impact on students' learning outcomes. The majority of the students agreed or strongly agreed that the LMS-based assessments helped them improve their listening skills, understand the listening tasks better, and provided useful feedback on their performance. These findings are consistent with previous studies that have shown the effectiveness of LMS-based assessments in enhancing students' learning outcomes in various contexts (e.g., Kerimbayev et al., 2017). Moreover, the study found that LMS-based assessments were accessible and easy to use. The majority of the students agreed or strongly agreed that the assessments were easy to access, provided clear instructions for completing tasks, and had a user-friendly interface. However, some students reported experiencing technical difficulties while accessing the assessments. These findings are in line with previous studies that have highlighted the importance of usability and accessibility in technology-enhanced learning (e.g., Bervell & Arkorful, 2020).

The study findings indicate a favourable influence on students' learning outcomes through the incorporation of LMS for facilitating assessments in an Advanced Listening course. The findings revealed that the LMS-based assessments helped students to understand the listening tasks better and provided useful feedback on their performance. These findings are consistent with previous research that has demonstrated the effectiveness of LMS-based assessments in enhancing learning outcomes in various contexts (Kattoua et al., 2016; Kerimbayev et al., 2017). In addition, the study found that LMS-based assessments were accessible and easy to use, with clear instructions and a user-friendly interface. While some students reported experiencing technical difficulties, overall, the majority of the students agreed that the assessments were easy to access. These findings align with previous research that has emphasized the importance of usability and accessibility in technology-enhanced learning (Bervell & Arkorful, 2020). Furthermore, the study found that the use of LMS encouraged independent learning and helped students become more comfortable with using technology for learning. The students reported feeling more confident in using technology for learning and that the LMS helped them become more responsible for their learning. These findings are consistent with previous research that has shown the potential of

LMS in promoting self-directed learning and enhancing students' digital literacy skills (Kerimbayev et al., 2017).

Another important finding of the study is that the use of LMS-based assessments increased students' engagement with the course material. The students reported feeling more motivated to learn and were more likely to participate to complete the assignments. This finding is consistent with previous research that has suggested that the use of technology can increase student engagement and motivation (Radia, 2019). Additionally, the study found that the use of LMS-based assessments provided students with timely and personalized feedback. The students reported receiving feedback on their performance in a timely manner and found it to be useful for their learning. This finding is consistent with previous research that has highlighted the benefits of providing students with personalized feedback (Ferreira et al., 2019). Lastly, the study found that the use of LMS-based assessments allowed for greater flexibility and convenience for students. The students reported being able to complete the assessments at their own pace and in their own time, which allowed them to better balance their other commitments. This finding is consistent with previous research that has suggested that technology-enhanced learning can provide greater flexibility and convenience for students (Bervell & Arkorful, 2020).

Conclusion

The current study aimed to develop an online formative assessment instrument for listening skills through LMS and investigate its effectiveness on students' learning outcomes. The findings of the study suggest that the developed assessment instrument is effective in enhancing students' listening skills and improving their performance. The majority of the students found the instrument to be accessible and easy to use, with clear instructions and a user-friendly interface. Additionally, the LMS-based assessments were found to promote independent learning and digital literacy skills among the students. The study has implications for teaching and learning practices in the context of technology-enhanced learning. The developed assessment instrument can be used by teachers to monitor students' progress in real-time and provide them with timely feedback. The findings of the study also highlight the importance of usability and accessibility in technology-enhanced learning, which can be helpful in designing effective online assessments. However, the study has some limitations that need to be acknowledged. The study was conducted in a specific context with a limited sample size, which may limit the generalizability of the findings. Moreover, the study did not investigate the long-term effects of the developed assessment instrument on students' learning outcomes. Future research can explore the long-term

effects of the developed assessment instrument on students' learning outcomes and investigate its effectiveness in different contexts. Further studies can also focus on exploring the factors that may influence students' experiences and perceptions of online assessments. Additionally, future research can explore the potential of incorporating multimedia elements in online assessments to enhance students' engagement and motivation. In conclusion, the developed online formative assessment instrument for listening skills through LMS is a promising tool for enhancing students' learning outcomes.

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