UNCOVERING USER EXPERIENCE EVALUATION IN NURSING-ENGLISH SEVERAL PLATFORMS THROUGH SUS AND PSSUQ

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ABSTRACT

The demand for English-proficient nurses in global healthcare settings has led to the development of multiple Nursing-English learning platforms. However, the user experience (UX) of these platforms significantly impacts their effectiveness in language learning. This study aims to evaluate the UX of several Nursing-English platforms using two established usability measurement tools: the System Usability Scale (SUS) and the Post-Study System Usability Questionnaire (PSSUQ). The primary objective is to uncover usability strengths and weaknesses across different platforms to improve the learning experience for nursing students. The research adopts a mixed-methods design, combining quantitative and qualitative data collection. A total of 109 nursing students from various universities in Sumatra, Indonesia, participated in this study. They were asked to use the Nursing-English platforms and evaluate them based on ease of use, system functionality, and information quality. The SUS provided an overall usability score for each platform, while the PSSUQ offered a more detailed breakdown across system usefulness, information quality, and interface quality. Results revealed an average SUS score of 84.85 across platforms, indicating a high level of user satisfaction. The PSSUQ scores corroborated these findings, with system usefulness and interface quality receiving the highest evaluations. The interactive content and relevance to nursing-specific language were highlighted as strengths, while areas for improvement included navigation and personalization features. Nursing-English platforms offer a generally positive user experience, with opportunities for optimization in user interface and learning customization. This study provides practical insights for enhancing Nursing-English learning tools to support students in preparing for global nursing careers.

I. INTRODUCTION

A demand for well-versed English-speaking nurses in the increasingly globalised healthcare industry is only expected to increase, especially in nations like Indonesia where the nursing profession is booming [1], [2], [3] . Despite their reputation for devotion and ability, linguistic problems frequently prevent Indonesian nurses from working overseas. English language proficiency is necessary for efficient communication as well as for comprehending medical terms and procedures and guaranteeing top-notch patient care in global contexts [4]. English language skills, especially in medical terminology, are becoming an essential skill for healthcare workers around the world. Digital technology enables a more dynamic learning approach by providing access to learning materials through bold platforms, applications, and mobile devices. This transformation allows students to learn English independently, according to their needs, and without time and place constraints. In addition, digital technology-based approaches such as e-learning, simulations, and context-based applications have helped nurses learn English in realistic clinical scenarios, which are relevant to the work situations they will face in the field.

In the context of nursing education, the role of digital technology is very important because it provides an opportunity for health workers to strengthen their English skills more efficiently. Digital-based learning not only offers flexibility in time, but also provides a learning environment that is close to real conditions in the medical field. Digital learning platforms that present simulated medical scenarios in English, for example, are very useful in helping nurses become familiar with the professional terms and communication they will need. With this technology, nurses can learn English in a specific context that suits their work needs, increasing the effectiveness of their learning and preparing them for a career in the global health sector.

Although advantageous, traditional language learning approaches can be time-consuming and may not be suitable for the fast-paced healthcare sector [5]. This has led to a move towards cutting-edge digital programs that provide more adaptable, effective, and convenient means of improving English language skills [6], [7]. Nurses can learn at their own pace and convenience with the help of dynamic and interesting content offered by digital learning platforms and applications [8]. Multimedia components, real-world scenarios, and quick feedback mechanisms are frequently included in these applications, all of which are essential for efficient learning careers [3]. It is essential to investigate and unearth the rapidly evolving digital innovations that are changing the face of Nursing English education in light of these adjustments [9]. These advancements not only quicken the learning curve but also give Indonesian nurses the language proficiency they need to succeed in international healthcare settings [10]. Educational institutions may better ready their students for the demands and challenges of international nursing jobs by embedding these digital tools into the nursing curriculum [11].

Across the realm of computer science, the introduction of digital learning materials has completely changed how instructional materials are distributed and used [12]. In non-English speaking areas such as West Sumatera, these innovations are essential for nursing students to overcome language hurdles and enhance their English language skills. The adoption of digital technology in English learning is also in line with national education policies and human resource development strategies in Indonesia. The Indonesian government has established various policies that support the digitalization of education as part of efforts to create a workforce that is ready to face global challenges [13], [14] Through programs such as the National Medium-Term Development Plan (RPJMN) and the "Merdeka Belajar" program from the Ministry of Education, Culture, Research, and Technology, the government encourages educational institutions to integrate digital technology in learning [15]. This policy is expected to improve access and quality of education, including English language education for health workers. Mastery of English as an international language of communication is very important in the health sector to meet the needs of the global market and increase the competitiveness of Indonesian health workers, especially in facing the ASEAN Economic Community (AEC) era [16]. The implementation of digital technology in nursing education is a step in line with this policy, because it supports improving the competence of health workers through more inclusive and adaptive learning access. Nursing students now have access to dynamic, adaptable, and user-friendly platforms thanks to the application of computer science ideas in the development of online educational resources [17]. Online educational resources for nursing students use a variety of multimedia components, including interactive activities, simulations, and movies that replicate real-world medical situations, to improve their English language [6], [18]. These resources not only improve learner engagement but also give students real-world exposure to medical terminology and communication techniques that are utilised in global healthcare settings [15]. Nursing students can gain access to a multitude of tools and practice materials that are essential for studying English in a medical setting by harnessing technology [19].

Broadly speaking, English learning methods are divided into two main approaches, namely the traditional and digital approaches, each of which has its advantages and disadvantages. The traditional approach, which is carried out face-to-face in the classroom, provides direct interaction between teachers and students. The advantages of this approach are direct feedback and guidance, as well as a regular learning structure that supports the development of speaking skills through intensive practice [19]. However, traditional learning has limitations in terms of flexibility of time and place, which is often not suitable for nurses who have busy work schedules. On the other hand, the digital learning approach offers greater flexibility, allowing users to learn anytime and anywhere [8]. Digital platforms are also often equipped with interactive and simulation-based features, which provide an immersive and medically relevant learning experience [20]. However, the disadvantages of this approach include the need for stable internet access and adequate devices, as well as the challenge of self-discipline in learning independently [20]. From this comparison, it can be concluded that both methods have their own strengths and weaknesses. The traditional approach excels in clear interaction and structure, while the digital approach offers flexibility and contextual content that is relevant to nurses [12], [21]. The combination of these two approaches, through a blended learning model, can be an ideal solution to provide a comprehensive learning experience and maximize the potential of technology in English language education for health workers[22]. This will support the readiness of Indonesian nurses in facing the demands of an increasingly global profession.

These technological enhancements are developing quickly, but there hasn't been much research done to assess how usable they are [2], [21]. The unique demands of varied learners are sometimes not met by many digital platforms, which creates a gap between innovation in technology and real-world implementation. This is especially troublesome in nursing English education, as optimal learning outcomes depend on user involvement and accessibility [23]. Usability problems can seriously impair these platforms' efficacy and keep nurses from being

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adequately prepared for the global workforce [24]. Therefore, in order to pinpoint areas that require development, a thorough assessment of these platforms is required [12].

Variety of fields have made extensive use of usability evaluation techniques, most notably the System Usability Scale (SUS), to gauge user satisfaction and interaction with digital interfaces [25]. SUS is a powerful method that may be used to assess perceived usability in a variety of systems, including educational ones [26]. SUS has been used in educational settings in the past to find usability problems and enhance user experience [27], [28]. When it comes to applying SUS to Nursing English platforms, particularly ones intended for global job preparedness, there is a gap in the literature [29]. This study fills this vacuum by concentrating on these new platforms' usability and employing SUS as the main assessment technique [18]. The effectiveness of these digital learning media is measured using the Post-Study System Usability Questionnaire (PSSUQ), a standard tool for assessing user satisfaction and the usability of computer-based systems [30]. The PSSUQ method provides insights into various aspects of the user experience, including ease of use, efficiency, and overall satisfaction with the system. These metrics are essential for understanding the impact of digital tools on students' learning outcomes and identifying areas for improvement [27].

A number of quickly evolving digital platforms that provide instruction in Nursing English will be subjected to SUS and PSSUQ in this project [28]. Evaluating their usability with an emphasis on measures like efficacy, efficiency, and user happiness is the goal [31], [32]. Through gathering SUS and PSSUQ data from real users (nurses getting ready for international careers) we hope to pinpoint the advantages and disadvantages of these platforms [16]. Using this method will enable us to obtain practical insights that will guide the creation of more potent digital resources for Nursing English instruction. The analysis of the SUS results will pinpoint areas where the user experience may be enhanced, guaranteeing that these platforms fulfil the educational requirements of nursing professionals [33], [34].Early outcomes from the SUS and PSSUQ evaluations show that although a lot of digital Nursing English platforms have good content, their user interface and accessibility are sometimes lacking. Uncertain directions, challenging navigation, and a deficiency of adaptive learning elements are common problems that have a detrimental effect on user engagement [35], [36] Developers can improve these platforms' usability and increase their efficacy in educating nurses for careers in a global setting by addressing these problems [11]. In-depth analysis of these results and suggestions for enhancing user friendliness and optimising the potential of online Nursing English instruction are provided in the discussion section.

This research's main finding emphasises the significance of usability in the creation of digital Nursing English platforms meant to prepare students for careers throughout the globe. We have discovered a number of crucial areas where these platforms may be enhanced to better meet the demands of their users by using SUS and PSSUQ. The need for globally proficient nursing practitioners is increasing, and digital education solutions must adapt to address these issues. By offering insights into how usability evaluation might spur innovation in Nursing English education and ultimately benefit nurses in their quest of worldwide career success, this research advances the field of medical instructional innovations in technology.

II. RESEARCH METHOD

The research procedure pertains to a thorough evaluation using the System Usability Scale (SUS) and Post-Study System Usability Questionnaire (PSSUQ) after a representative sample of digital platforms for Nursing English instruction was carefully chosen. A broad cohort of nurses will test these platforms and evaluate their usability using a standardised survey instrument. The survey will measure important aspects including efficacy, efficiency, and overall user satisfaction [37]. It is based on standardised SUS metrics and offers a strong framework for evaluating usability. The study uses a mixed-methods design to examine how well Nursing English's quick-paced digital innovations prepare students for professions in a globalised world. This strategy provides a thorough grasp of the study problem by combining quantitative and qualitative methods [4], [35], [38] The creation and execution of an online Learning Management System (LMS) specifically designed for nursing English, as well as its assessment employing as seen as figure 1.
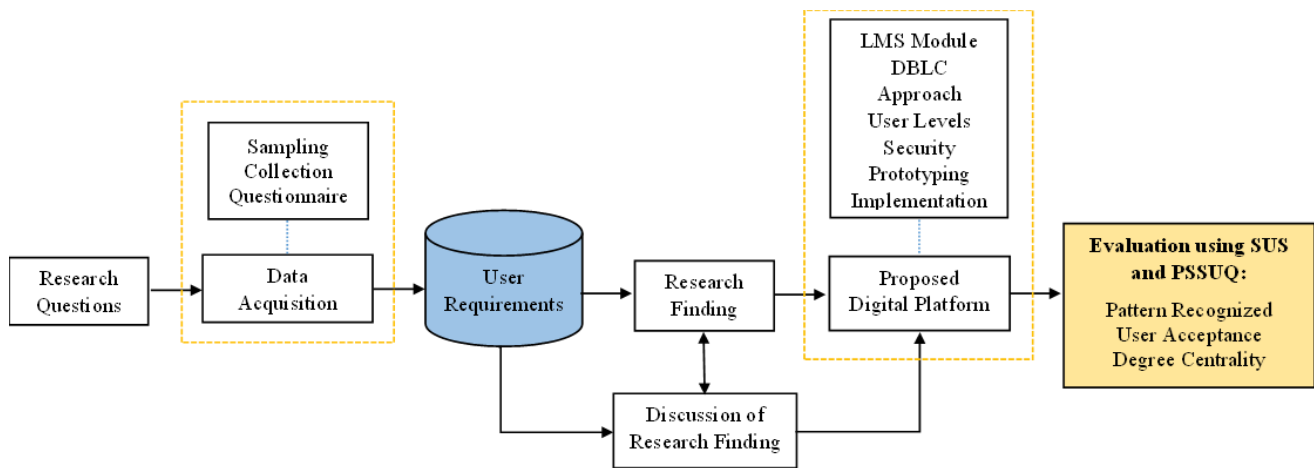
Fig 1. Reliability of the Scheduled Tasks

According to what illustrated by Figure 1, this section describes the participants, system development, data processing methodologies, research design, data gathering methods, assessment procedure, and ethical considerations. From the initial development of research questions to the final discussion of findings, it offers a comprehensive road map of how the study is carried out. The research methodology diagram's inclusion aids in the visualisation of the whole procedure and the links between the many study phases. A stratified random sampling technique was employed to choose a sample of nursing students from universities in West Sumatra, Indonesia, to ensure representation from various academic years and nursing programs.

A. DBLC Approach

In addition to having a basic level of English proficiency, participants must be enrolled in a nursing program and willing to engage in the study. To steer the study's objectives and focus, appropriate research questions must first be formulated. To ensure a thorough understanding of the target consumers, information is obtained through questionnaires, interviews, and sampling in the subsequent phase of data collecting. The study's initial stage starts with a thorough identification of user requirements, making sure that the platforms chosen for examination are in line with the particular requirements of nursing professionals who want to improve their English proficiency in order to develop their careers internationally. These specifications will guide the platform selection process, guaranteeing that the sample includes the most cutting-edge and pertinent digital solutions out there.

These data are used to identify user requirements, which guide the development of the suggested digital platform's functionality and design. A Learning Management System (LMS) module, a Data-Based Learning Cycle (DBLC) approach, user level differentiation, security features, prototyping, and implementation techniques are some of the essential components of this platform. Figure 2 shows a schematic of the research idea.
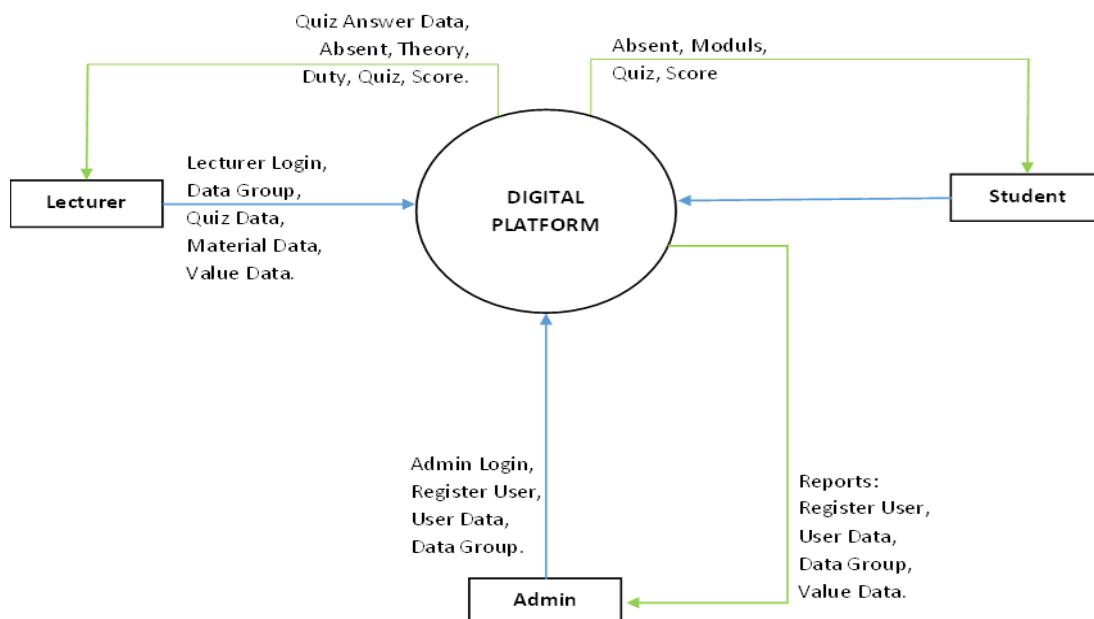

Fig 2. Design of Online Educational Mechanisms

The process of creating an internet-based environment is depicted in Figure 2, which also highlights the essential elements that influence its functionality and design. The first step is identifying the needs of the user, which is done using data gathered from multiple sources. This important phase guarantees that the platform will satisfy the unique requirements of its consumers. A Learning Management System (LMS) module, which provides the fundamental framework for distributing instructional materials and controlling user interactions, is integrated throughout the development process. Furthermore, the platform integrates a Data-Based Learning Cycle (DBLC) methodology that facilitates ongoing learning and enhancement through the examination of user data and feedback.

B. System Usability Scale (SUS)

User level dignity, which enables customised learning experiences based on the user's proficiency, and strong security features to safeguard user data and guarantee safe interactions are additional crucial elements of the platform. Another crucial phase in the development process is prototyping, which is where the platform's first iteration is made and tested [30]. This makes it possible to make adjustments before to the platform's ultimate deployment, guaranteeing its usefulness and efficacy. The SUS which evaluates factors including pattern recognition, user acceptability, and degree centrality and offers insights into the platform's usability and user satisfaction, is then used to determine how effective the platform is.

After that, user approval is assessed using the SUS evaluation, which focusses on how users see the platform's usability, ease of navigation, and content delivery [31], [39]. The SUS, a well-respected instrument for usability assessments, will measure user experience in a number of dimensions, making it possible to analyse platforms precisely in terms of how well they support learning objectives. John Brooke developed the SUS in 1986. It is a reliable, popular, effective, and fairly priced usability scale. Ten questions and five alternative responses make up SUS. The replies range from strongly disagree to strongly agree, with a maximum score of 100 and a lowest score of 0. To calculate the SUS score, a number of rules are applied to the information gathered from respondents. The SUS typical customer conversion scale and computation formula are shown in (1) and (2) [26].

$$\text{SUS} = 2.5 \times \left[\sum_{n=1}^{5} (U_{2n-1} - 1) + (5 - U_{2n}) \right] \tag{1}$$

When it comes to the SUS questionnaire, U_{2n-1} stands for the odd-numbered question scores and U_{2n} for the even-numbered question scores [26]. Each odd-numbered question (1, 3, 5, 7, and 9) will result in the respondent's score being deducted by one point. Every question has an even number (2, 4, 6, 8, 10), and the overall result is determined by deducting the respondents' answers from the question score, which is subtracted from a maximum of 5. The SUS score is determined by multiplying the total by 2.5 after adding the scores for each question. For one respondent, the scoring guidelines are applicable. By adding up all of the respondents' scores ($\sum x$) and dividing by the total number of respondents (*n*), equation 2 is used to further determine each respondent's SUS score ($\bar{x}$).

$$\bar{x} = \frac{\sum x}{n} \tag{2}$$

Finding the average SUS score across all applicants does the system usability scale (SUS) intake process. After that, what emerges is shortly after SUS-adjusted. Whatever category the test results fall into that have already produced an average score [26]. Since the average SUS score for all studies is 68, any score above 68 will be regarded as above average, and any score below 68 will be regarded as below normal. Anything with the usability has gone wrong and needs to be criticised if the result is less than 68. System Usability Scale (SUS) score interpretation chart, a widely used tool for evaluating the usability of systems, interfaces, and digital platforms shown in figure 3. The SUS score is calculated based on a set of user responses and ranges from 0 to 100, with higher scores indicating better usability [40].
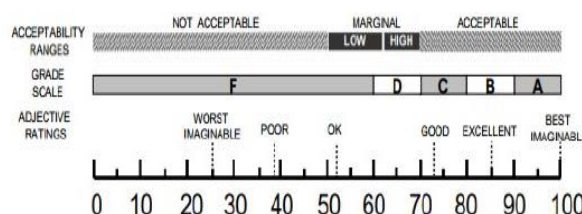

Fig 3. SUS Score Interpretation Chart

Figure 3 shown the SUS score is broken down into multiple categories in this chart to aid in the interpretation of the findings. To begin with, the Adjective Ratings offer a qualitative evaluation that goes from "Worst Imaginable"

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to "Best Imaginable," giving a descriptive picture of what users think. The system's overall performance may then be more easily assessed thanks to the Grade Scale, which aligns the scores with a well-known grading system where usability is scored from F (Fail) to A (Excellent). Finally, the Acceptability Ranges provide a clear picture of whether a platform satisfies usability standards by indicating whether a system is considered "Not Acceptable," "Marginal" (with both low and high subcategories), or "Acceptable." is shown in Table 1.

TABLE 1.
TAXONOMY OF SCALE NUMERIC REACHES SUS

Limit of SUS Index	Level
84.1 – 100	A+
80.8 – 84.0	A
78.9 – 80.7	A-
77.2 – 78.8	B+
74.1 – 77.2	B
72.6 – 74.0	B-
71.1 – 72.5	C+
65.0 – 71.0	C
62.7 – 64.9	C-
51.7 – 62.6	D
0.0 – 51.6	F

Analysis of usage patterns (pattern recognised), or how users engage with different aspects of each platform, is the first step in the evaluation process after the platforms have been discovered. This is a crucial stage in determining whether user involvement is hampered by obstacles or whether the platforms provide smooth learning experiences. After that, user approval is assessed using the SUS evaluation, which focusses on how users see the platform's usability, ease of navigation, and content delivery. The SUS, a well-respected instrument for usability assessments, will measure user experience in a number of dimensions, making it possible to analyse platforms precisely in terms of how well they support learning objectives.

C. Post-Study System Usability Questionnaire (PSSUQ)

Finally, the effectiveness of the platform is evaluated using the Post-Study System Usability Questionnaire (PSSUQ), which assesses aspects like pattern recognition, user acceptance, and degree centrality, providing insights into the platform's usability and user satisfaction. Examining involves evaluating a product's performance and usefulness, as well as how easily its user interface can be explored to ensure customer satisfaction and usability, with the aim of identifying potential issues[41]. An evaluation can help determine the product's level of customer appeal. By analysing the user experience, software designers can gain insights into user behaviour when interacting with the device's interface and assess the product's marketability [42]. The PSSUQ (Post-Study System Usability Questionnaire) was specifically developed to conduct scenario-driven usability testing.

The IBM PSSUQ package includes Likert-scale metrics [43]. These metrics are divided into 16 questions categorized into four main groups: information quality (INFOQUAL), system usability (SYSUSE), interface quality (INTERQUAL), and overall satisfaction score (OVERALL). The PSSUQ score ranges from 1, indicating strong disagreement, to 7, indicating strong agreement as show as table 2.

TABLE 2.
GUIDELINES FOR PSSUQ DISCLOSURES [30]

No	PSSUQ Disclosures
1	I really like with this system's general ease of use.
2	This way of working was easy to use.
3	Through this process, I was able to finish all the tasks and simulations quickly.
4	I had no issues adopting this system.
5	This system was simple to learn how to take advantage of.
6	Considering this setup, I think I could get consumed with soon.
7	Error messages from the system made it very evident to me how to resolve issues.
8	Once I erred while using the technique, I was able to get back up swiftly and effortlessly.
9	This system came with clear documentation, on-screen messages, and online support, among additional features.
10	Finding the information, I desired was simple.
11	The completion of the exercises and scenarios was aided by the information.
12	The information on the platform's panels was clearly organized.
13	This system had a great user interface.
14	I particularly enjoy using this system's interface.
15	This system fulfills all my expectations in terms of features and functionality.
16	Overall, I am impressed by this system all around.

Table 2 presents the Guidelines for PSSUQ Disclosures, which detail the specific statements used in the Post-Study System Usability Questionnaire (PSSUQ) to assess different aspects of a system's usability [44]. The table lists 16

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statements that users respond to, each focusing on a different facet of the system's usability, functionality, and overall user experience. The first few statements (1-6) focus on the general ease of use, efficiency, and the user's ability to complete tasks using the system. These questions aim to gauge how intuitive and straightforward the system is from a user's perspective. Statements 7-9 assess the clarity and helpfulness of error messages, the ease of recovery from mistakes, and the quality of support documentation and on-screen help provided by the system. These disclosures are crucial for evaluating how well the system assists users in overcoming challenges and understanding its functionality.

The next set of statements (10-12) evaluates the accessibility and organization of information within the system. This includes how easily users can find the information they need, the effectiveness of that information in helping them complete tasks, and how well the information is structured. The final statements (13-16) assess the overall user interface (UI), the user's satisfaction with the system's features and functionality, and their general impression of the system [45]. These responses provide insight into the system's design quality and whether it meets user expectations. Overall, the PSSUQ statements in Table 1 are designed to cover a comprehensive range of usability aspects, from ease of use to the quality of user support, ultimately helping to identify areas where the system excels or needs improvement.

The notion of degree centrality, which identifies the salient characteristics of the platform that have the greatest impact on total user happiness, will be examined in more detail. By using degree centrality, we can identify which features—like interactive elements, accessible material, or user interface design—are most important for providing the best possible user experience. Descriptive statistical approaches will be employed to conduct a thorough analysis of the data gathered from the SUS-based questionnaires, providing quantitative insights into the usability performance of the platforms. In order to capture nuanced user experiences that might not be fully reflected in number scores, qualitative feedback will also be requested. With the use of this qualitative data, certain usability issues will be better understood, and it will add insightful context to the quantitative results.

By utilising a combination of quantitative and qualitative methodologies, this research aims to provide a thorough assessment. Developers and educators can refine these digital platforms with guidance from the actionable insights that can be obtained from the dual perspectives provided by SUS scores and user feedback. By ensuring that the platforms are in line with the changing needs of global healthcare environments, the aim is to improve the entire learning experience and better prepare nurses for careers in the global arena. Ultimately, the goal of this research is to make a substantial contribution to the domains of nursing education technology and usability engineering by offering a clear road map for future advancements in digital platforms that facilitate the development of critical linguistic and professional competencies for global nursing careers

III. RESULT AND DISCUSSION

The research approach comprised multiple crucial stages, all of which played a part in the thorough assessment and improvement of the post-launch usability of nursing-english.com. The methodology combined quantitative and qualitative methods to offer a comprehensive view of system performance and user experiences. Here is a summary of the study's analysis and conclusions after applying the previously indicated investigation methodologies. In all, 109 nursing students from various colleges in West Sumatra, Indonesia participated in the study, offering a representative and varied sample to assess the efficacy of the Learning Management System (LMS) that was put into place. With 83.5% of participants identifying as female and 16.5% as male, the gender distribution was noticeably skewed towards females, which is consistent with the region's overall tendency of higher female enrolment in nursing programs. There are 16.5% of men and 83.5% of women. detail displayed in Figure 4.
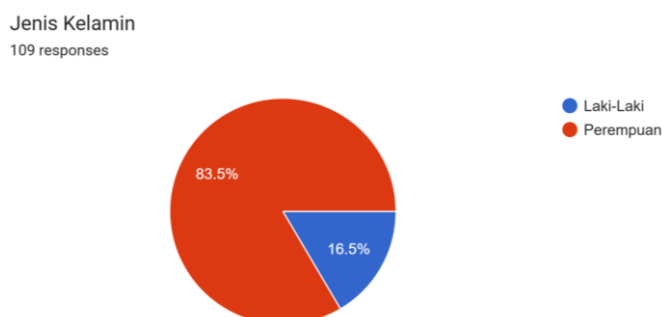

Fig 4. Notation of Distribution by Gender

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The participants were primarily in the age range of 18 to 25 years old, with a range of undergraduate education levels among them. The findings are relevant to the normal demographic involved in nursing education since the age distribution is representative of traditional university-aged students. Depending on the age Most are in the 18–25 year old variety shown as fig 5.
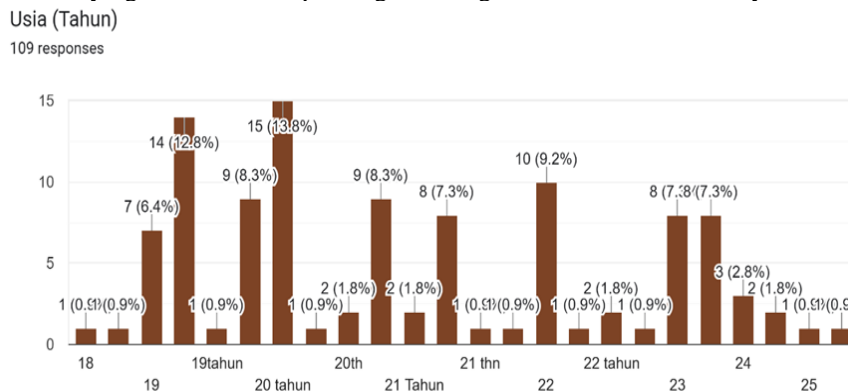

Fig 5. Age-Based Distribution Notation

The participants were spread pretty evenly across the years of study in terms of their academic standing: 30% were first-year students, 25% were second-year students, another 25% were third-year students, and the other 20% were final-year students. Because of this stratification, the LMS's efficacy could be evaluated for students at different stages of the nursing curriculum's academic advancement and experience.60% of the participants classified their previous English language proficiency as intermediate, 30% as basic, and 10% as advanced. Due to the wide range of language abilities, the LMS's efficacy and adaptability were demonstrated, offering a thorough grasp of how learners with varying beginning proficiency levels were affected by it.

A. DBLC Approach

The first step in DBLC is to identify the specific learning problems or challenges faced by the users of the LMS. This involves a deep understanding of user needs, which could be students or instructors using the LMS. The identified problem is the difficulty students face in following English content for professional purposes, such as nursing, where learning is often non-interactive and lacks personalization. Designing a solution to be applied in the LMS comes next after the problem has been recognised. This entails creating features and material that satisfy user requirements. At this point, a variety of technologically enhanced learning strategies can be employed, such as interactive elements like discussion boards, interactive films, and adaptive quizzes. The interactive modules that improve English language learning through nursing-based scenario simulations and more authentic professional communication are the planned solution for this LMS. In this step, the designed solution is implemented into the LMS. This could involve developing the user interface, integrating learning modules, and organizing content according to the design plans. The implementation phase is crucial because the LMS must be responsive and accessible across various devices as shown as figure 6.
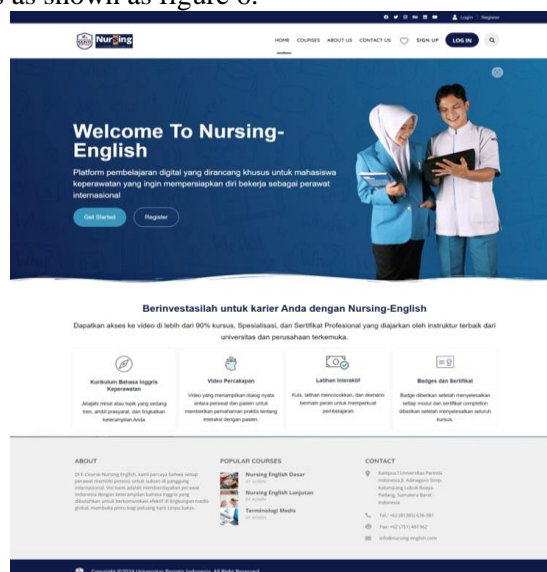

Fig 6. nursing-english.com homepage

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Figure 6 illustrates the homepage of a Nursing-English Learning Management System (LMS) designed specifically for nursing students preparing for international careers. The system is presented as a user-friendly digital platform that offers targeted resources for enhancing English language skills within the healthcare context. The central banner welcomes users with a clear call to action: "*Welcome to Nursing-English*" emphasizing that this platform is crafted to help nursing students prepare for work as international nurses. The platform provides easy access to registration and sign-up options, encouraging users to get started immediately. Below the banner, a statement reinforces the value proposition: "Berinvestasilah untuk karier Anda dengan Nursing-English," which translates to "Invest in your career with Nursing-English." It highlights key features such as over 90% video access, specializations, and professional certifications taught by leading instructors from prominent universities and companies. Nursing-English.com is designed following the blueprint provided, which outlines the main components and workflow of the Nursing-English Learning Management System (LMS**)** as shown as figure 7.
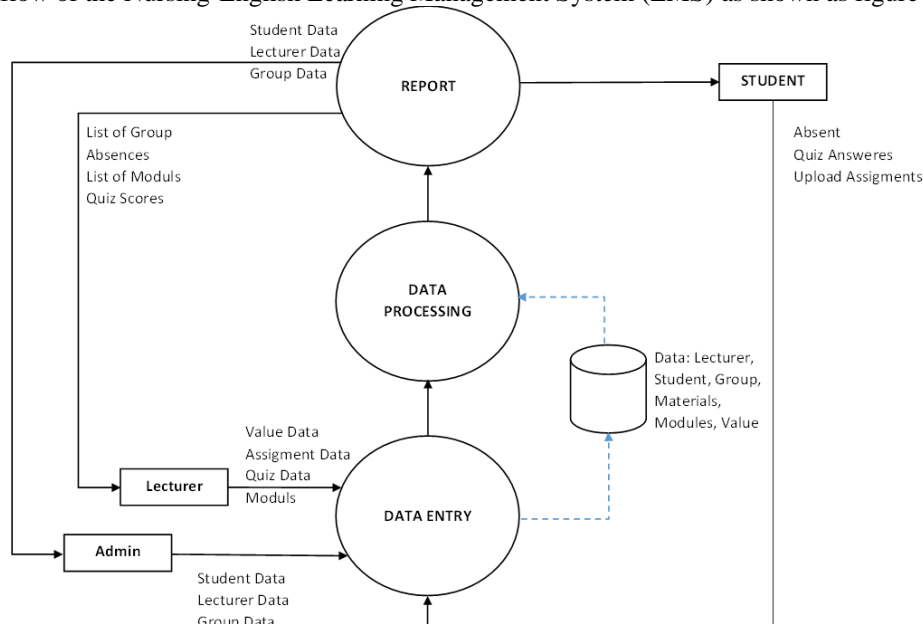

Fig 7. DBLC Approach

As seen in Figure 7, the blueprint acts as a structural blueprint for the platform's design, guaranteeing that all required features and capabilities are incorporated in a way that best suits user needs. The user interface (UI), backend database, and basic services that oversee content delivery, user authentication, and data storage comprise the LMS's foundational architecture, which is where the plan starts. For nursing students aiming for global career readiness, this blueprint provides a strong framework for the Nursing-English Learning Management System (LMS). It guarantees that all essential features (from user interaction to content management and assessment) are seamlessly integrated. The end result is a comprehensive and flexible learning environment.

The system architecture is designed to support scalability, allowing the platform to handle multiple users concurrently while maintaining optimal performance. The design highlights a clear user flow, beginning from the registration and login process, moving into the main dashboard where users access courses, progress tracking, and their personalized learning paths. The interactive learning modules are at the core of the blueprint, offering features such as video conversations, quizzes, and simulations, which aim to enhance practical language skills for nurses as shown as figure 8.
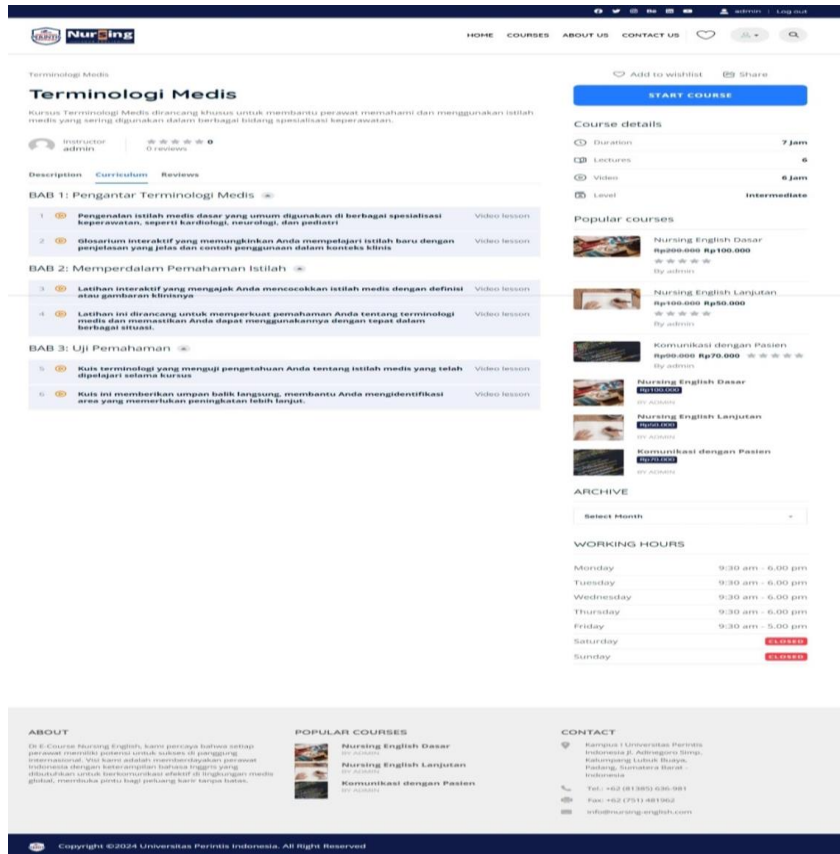
Fig 8. Example of One of The Courses Provided

Figure 8 illustrates an example of one of the courses provided by the Nursing-English LMS, titled "Terminologi Medis" (Medical Terminology). The course is designed to help nurses understand and use important medical terms required across various nursing specializations. The course outline is broken down into three main sections, with each section containing multiple video lessons and interactive activities. These sections aim to introduce medical terminology, deepen understanding through exercises, and assess learners' comprehension via quizzes. On the right side of the page, detailed information about the course is provided, such as the duration, number of lectures, and the level of the course (intermediate). Additionally, there's a clear "Start Course" button located prominently, allowing users to begin the course easily. The layout is user-friendly, providing a straightforward path for learners to engage with the material.

B. Usability Assessment Outcomes SUS

Utilising the SUS, the developed Learning Management System (LMS) was assessed for effectiveness and user satisfaction. The SUS was tested by nursing students using the web-based platform https://nursing-english.com . This website is designed exclusively to help nursing students improve their English language skills through a range of interactive features and realistic simulations. The purpose of the SUS survey is to evaluate many aspects of system usability, including overall user satisfaction, information quality, ease of use, and interface quality. The evaluation's conclusions provide a comprehensive picture of how well this technology supports learning and meets user demands. Table 3 presents the evaluation results, with the average score for each category. Table 3 is the Dictionary of System Usability The next ten questions are scored by 109 respondents using a SUS, choosing from a list of five possible answers that include Agree wholeheartedly to disagree.

TABLE 3.
INFORMATION RELEASED TOWARDS SYSTEM USABILITY SCALE (SUS)

No	SUS Disclosures
1.	I think that I want to use the nursing-english.com frequently.
2.	I found the nursing-english.com nnecessarily complex.
3.	I thought the nursing-english.com was easy to use.
4.	I believe that I would need the support of a technical person to be able to use this nursing-english.com
5.	I found the various functions in this nursing-english.com were well integrated.
6.	I thought there was too much inconsistency in this nursing-english.com
7.	I imagine most people would learn to use nursing-english.com very quickly.
8.	I found the nursing-english.com very cumbersome to use.
9	I felt very confident using nursing-english.com

| 10. | I needed to learn many things before I could get going with this nursing-english.com |

The established score, which is calculated using the formula (questionnaire one - 1) + (5 - questionnaire two), displays the findings of the SUS equation. The average score for the endpoint is obtained by fragmenting the formula (sum of computed score × 2.5) by 52, indicating the total number of those polled. The results of the SUS equation are displayed in the established score, which is computed average score for the endpoint is derived, which represents the total number of 109 respondents. Table 4 shows that the final SUS score is **84.8558.**

TABLE 4.
SYSTEM USABILITY SCALE (SUS) RESULTS

User	SUS										Total	SUS SCORE
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10		
U1	4	4	4	4	4	3	4	4	3	3	37,00	92,50
U2	4	3	4	3	4	4	4	3	4	3	36,00	90,00
U3	3	3	4	4	3	3	4	3	3	3	33,00	82,50
U4	4	2	4	4	4	3	4	3	4	3	35,00	87,50
U5	3	4	3	4	3	3	3	3	3	3	32,00	80,00
U6	3	3	3	3	4	4	4	3	4	3	34,00	85,00
U7	3	3	3	4	3	3	3	3	4	3	32,00	80,00
U8	4	3	4	4	4	4	4	3	3	3	36,00	90,00
U9	3	3	3	3	4	4	4	3	3	3	33,00	82,50
U10	4	4	3	4	3	3	3	3	3	2	32,00	80,00
U11	3	3	4	3	3	4	4	4	3	3	34,00	85,00
…	…	…	…	…	…	…	…	…	…	…	…	…
…	…	…	…	…	…	…	…	…	…	…	…	…
…	…	…	…	…	…	…	…	…	…	…	…	…
…	…	…	…	…	…	…	…	…	…	…	…	…
…	…	…	…	…	…	…	…	…	…	…	…	…
U106	3	3	3	3	3	3	4	4	4	3	33,00	95,00
U107	4	3	4	4	4	4	4	4	3	4	38,00	80,00
U108	3	3	3	3	4	4	4	3	3	3	33,00	87,50
U109	3	3	3	3	3	3	4	4	4	3	33,00	67,50
SUS Score												**84.8558**

In line with the results of Table 3 analysis, users had a generally positive experience with nursing-english.com, with a particular appreciation for the platform's user-friendly appearance and quick checkout procedure. Still, several things needed to be improved, such improving search capabilities and simplifying travel routes. Figure 9 displays the SUS evaluation for the nursing-english.com, user experience, with a score of **84.8558**. It goes into great into about how respondents can advance if SUS receives an "A" and falls into the acceptable/excellent level.

Low scores on interface consistency can interfere with user experience because they feel they have to re-study every time you move pages. This is due to different navigation buttons or menus in each section, this can make users lose focus or require more time to navigate the platform. Increasing the consistency of the interface will help users feel more comfortable and efficient in using platforms. Some users also assess the quality of technical support and additional information provided at LMS, such as FAQ or use guidelines. Low scores in this aspect can show that users feel less helped when experiencing technical difficulties or not find adequate guidelines.

Overall, the SUS score of 84.86 indicates that this LMS has good use. However, to improve further user experience, improvements can be focused on the standardization of positions and button design throughout the pages to improve user navigation comfort, add interactive guidelines and FAQs to help users when facing technical difficulties, and ensure that all the main functions are easily accessible and understood Without the need for many guidelines. With this improvement, LMS is expected to provide a more pleasant and effective experience, and maintain user satisfaction at a high level. Some users need technical assistance when using LMS, especially for those who are not accustomed to digital technology. When the use of LMS is expanded to serve thousands of users simultaneously, the system may experience a high load that can cause a decrease in performance, such as a slow response time or even access failure. This challenge is increasingly relevant if users access interactive content that requires large bandwidth, such as video or simulation. To ensure scalability, it is important to implement cloud - based architecture that is able to adjust capacity dynamically according to the number of users. In addition, the optimization of cache and storage for static elements (such as images and scripts) can help speed up the loading time. Periodic load testing is also recommended to monitor and identify potential performance problems before it occurs on a large scale.

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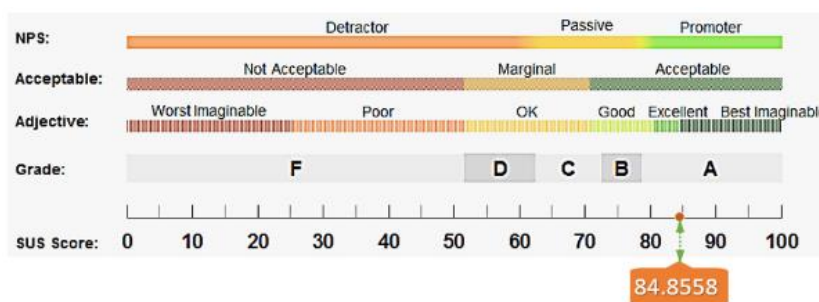
Fig 9. SUS Score of Nursing-English.com

Figure 9 shows a detailed SUS (System Usability Scale) score of 84.8558, which falls within the "Promoter" category according to the Net Promoter Score (NPS) scale. This score is considered Acceptable and lands in the Excellent range on the Adjective scale, indicating that users had a very positive experience with the system. In terms of grading, this score translates to an A, which is the highest possible grade for system usability, signaling that the system is highly user-friendly and performs exceptionally well in meeting user expectations. The Acceptability range also confirms that the system is highly acceptable, as it far exceeds the Marginal zone and is firmly within the Acceptable category. Overall, the SUS score of 84.8558 suggests that users find the system intuitive, easy to use, and well-designed, with little room for significant usability improvements.

C. Usability Assessment Outcomes PSSUQ

The Learning Management System (LMS) that has been constructed also was evaluated using the Post-Study System Usability Questionnaire (PSSUQ) to determine its efficacy and user satisfaction. Nursing students' actions on the web-based platform available at https://nursing-english.com were used to test the PSSUQ. This website is specifically made to use realistic simulations and a variety of interactive features to assist nursing students get better at English. The PSSUQ survey was created to gauge a number of system usability factors, such as overall user happiness, information quality, simplicity of use, and interface quality. The evaluation's findings paint a complete picture of how well this system satisfies user needs and aids the learning process. The evaluation results are displayed in a table1, which includes the average score for each category as well as the PSSUQ scores of each respondent.

TABLE 5.
RESULTS OF THE STUDY.

RESPONDEN	Overall PSSUQ			PSSUQ SCORE
	SYSUSE	INFOQUAL	INTERQUAL	
R1	3,000	2,833	2,000	**2,688**
R2	2,667	2,333	1,000	**2,125**
R3	2,000	2,167	1,500	**1,938**
R4	2,333	2,833	2,250	**2,500**
R5	2,333	2,833	2,000	**2,438**
…	…	…	…	…
…	…	…	…	…
…	…	…	…	…
R108	1,500	1,500	1,250	**1,438**
R109	2,333	2,667	2,250	**2,438**
Total	SYSUSE	INFOQUAL	INTERQUAL	**Overall**
	2,016	**2,412**	**1,912**	
PSSUQ Result				**2,227**

The score on SYSUSE 2.016 indicates that users generally feel that the system has good usability in helping them complete learning tasks. A relatively good score on this aspect indicates that the LMS has succeeded in providing tools and features that support users in achieving their learning goals, such as exercises and simulations that are relevant to the medical world. However, there may be features that are considered less than optimal or incomplete for some users. The INFOQUAL information quality aspect received the highest score of the three aspects, namely 2.412. This score indicates that users feel that the information provided in the LMS, such as course materials, guides, and descriptions, is of sufficient quality and easy to understand. Users feel that the information provided helps them complete tasks and understand the learning context. A high score on this information quality contributes positively to user satisfaction, because users feel helped by the information presented clearly and relevantly. INTERQUAL received the lowest score among the three aspects, namely 1.912. This indicates that users feel that the design and interface of the LMS can be improved. Interface quality includes visual appearance, ease of navigation, and consistency between pages.

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From these results, it can be concluded that the information quality aspect (INFOQUAL) is the main strength of this LMS, because the information presented is considered relevant and helpful. Meanwhile, the system usability aspect (SYSUSE) is good, but still has room for improvement, especially in terms of functionality and relevance of features for each user skill level. The interface quality aspect (INTERQUAL) requires more attention, especially in maintaining consistency and design aesthetics so that users are more comfortable navigating. The scores 2.227 indicate a high level of satisfaction with the LMS across all dimensions, with the highest scores in system usefulness and overall satisfaction. Qualitative feedback from students highlighted several key features of the LMS that contributed to its effectiveness. Students appreciated the inclusion of interactive videos and simulation practices, which made learning more engaging and practical. The modules covering medical terminology and patient communication were found to be particularly useful. The majority of students found the LMS easy to navigate and use. The findings from this study demonstrate the significant potential of digital innovations in enhancing Nursing English education.

The high usability scores and positive feedback from students suggest that the LMS is a valuable tool for language learning. The observed improvements in English proficiency further validate the effectiveness of the digital platform. The success of the LMS can be attributed to its integration of multimedia resources such as interactive videos and simulations. These tools provided a practical context for language use, which is crucial for nursing students. The user-friendly design of the LMS played a critical role in its acceptance and effectiveness. An intuitive interface ensured that students could easily navigate the platform and access the learning materials without technical difficulties.

IV. CONCLUSION

The primary objective of this research was to investigate and assess how quickly evolving digital innovations are affecting nursing English instruction and how well they might prepare students for careers in a global context. The results show that nursing students' English language competency is greatly improved by implementing a web-based Learning Management System (LMS), which also improves their preparedness for employment chances abroad. The study demonstrates that digital innovations have a substantial impact on nursing students' educational outcomes, especially when they incorporate interactive and practical learning components. This is in line with the expanding demand on the international employment market for skilled English-speaking healthcare specialists. Arguably the study offers insightful information, it's vital to recognise its limits. The study had a small sample size and was restricted to a particular area of West Sumatra. A larger and more varied sample should be used in future studies to improve the generalisability of the results. The LMS was evaluated during a brief period of time. To evaluate the long-term effects of digital learning platforms on language ability and professional achievement, long-term research is required. For certain students, having access to technology and the internet might be a challenge. For these kinds of programs to be successful, equal access to digital learning resources must be guaranteed.

When the use of LMS is expanded to serve thousands of users simultaneously, the system may experience a high load that can cause a decrease in performance, such as a slow response time or even access failure. This challenge is increasingly relevant if users access interactive content that requires large bandwidth, such as video or simulation. To ensure scalability, it is important to implement cloud -based architecture that is able to adjust capacity dynamically according to the number of users. In addition, the optimization of cache and storage for static elements can help speed up the loading time. Periodic load testing is also recommended to monitor and identify potential performance problems before it occurs on a large scale.

The LMS has been implemented successfully, and the positive results show that digital tools may be very helpful in improving language competency and getting students ready for professions in a globalised world. The need for proficient English communication skills grows as the healthcare industry becomes more globalised. In order to give student the skills they need for the global job market, nursing education programs must prioritise integrating digital technologies. The study also emphasises how critical it is to modify course material to meet the unique requirements of nursing students. Educational programs can guarantee that students are not only fluent in English but also capable of using their language abilities in authentic healthcare settings by emphasising the actual application of language use in clinical settings. The study adds to the continuing conversation about improving educational outcomes with technology by emphasising the possibilities of digital advances in nursing education.

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