**Jurnal Warta LPM**

Vol. 26, No. 3, Juli 2023, hlm. 278-288
p-ISSN: 1410-9344; e-ISSN: 2549-5631
DOI: https://doi.org/10.23917/warta.v26i3.1460

# Developing Online Laboratory as an English Learning Media for Muhammadiyah Schools in Bantul Regency

[1]Dwijoko Purbohadi*, [1]Titis Wisnu Wijaya, [2]David Sulistiawan Aditya

*[1]Universitas Muhammadiyah Yogyakarta, Indonesia*
*[2]Universitas Aisiyah Yogyakarta, Indonesia*
*Email: dwijoko.purbohadi@umy.ac.id*

**Article Info**

*Submitted: 7 January 2023*
*Revised: 11 March 2023*
*Accepted: 16 June 2023*
*Published: 18 July 2023*

***Keywords**: language laboratory, moodle, online, scorm*

**Abstract**

*The Online Language Lab is an innovation aimed at revitalizing English language practice activities in schools, replacing the analog language labs that have long been abandoned by many schools in Indonesia. It is known that English language learning focused only on materials such as reading, pronunciation, and speaking without practice can hinder students' ability to communicate effectively in English. We have successfully developed an internet-based Online Language Lab by combining several supporting technologies, including Learning Management System (LMS), speech to text converter, text to speech converter, p5 JavaScript library, Moodle app, and SCORM, to create an interactive online language lab. Students can learn English independently with learning modules tailored to their respective abilities. Our Online Language Lab system has been tested in a school to measure its usability, and the results were very positive. In addition, we also conducted experiments to assess the feasibility of our system and the results showed that it can be implemented widely in various schools in Indonesia. It is expected that with the Online Language Lab, students can significantly improve their English language skills and be better prepared to face global challenges in the future. This is a crucial breakthrough in improving the quality of English language education in Indonesia.*

**Abstrak**

Lab Bahasa Online merupakan sebuah terobosan yang bertujuan untuk meningkatkan kembali kegiatan praktik Bahasa Inggris di sekolah, menggantikan lab bahasa analog yang telah lama ditinggalkan di banyak sekolah Indonesia. Pembelajaran Bahasa Inggris yang hanya terfokus pada materi seperti reading, pronunciation, dan speaking tanpa adanya praktik telah diketahui menghambat kemampuan siswa untuk berkomunikasi secara efektif dalam bahasa Inggris. Kami berhasil mengembangkan Lab Bahasa Online yang berbasis internet dengan menggabungkan beberapa teknologi pendukung, antara lain Learning Management System (LMS), speech to text converter, text to speech converter, p5 javascript library, Moodle app, dan SCORM, untuk menciptakan sebuah lab bahasa online yang interaktif. Siswa dapat belajar bahasa Inggris secara mandiri dengan modul-modul pembelajaran yang disesuaikan dengan kemampuan masing-masing siswa. Sistem Lab Bahasa Online kami telah diuji coba di sebuah sekolah untuk mengukur usability-nya dan hasilnya sangat positif. Selain itu, tim pengabdian juga melakukan eksperimen untuk menilai tingkat ketelaksanaan (*feasibility*) sistem kami dan hasilnya menunjukkan bahwa sistem ini dapat diimplementasikan secara luas di berbagai sekolah di Indonesia. Diharapkan dengan adanya Lab Bahasa Online, siswa dapat meningkatkan kemampuan berbahasa Inggris secara signifikan dan lebih siap menghadapi tantangan global di masa depan. Ini adalah suatu terobosan yang

sangat penting dalam meningkatkan kualitas pendidikan bahasa Inggris di Indonesia.

## 1. INTRODUCTION

One of the reasons for the lack of English language proficiency at the basic level in Indonesia is attributed to the education system that emphasizes theory over practice (Zein et al., 2020)In general, most schools do not possess a language laboratory, which is essential in providing opportunities for effective English language practice (Fajemidagba Ayodele, 2020). This situation has persisted for an extended period, resulting in a limited number of individuals who have achieved proficiency in English. Despite the inclusion of English language as a mandatory subject in junior high school, the ability to speak English fluently and actively remains rare.

The Language Laboratory is an essential facility for developing students' speaking skills (Krishna, 2021). However, only a few schools have invested in this facility. Generally, schools have not prioritized the need for a Language Laboratory; instead, they tend to focus on teaching English as theoretical knowledge. Even if a school has a Language Laboratory, it may not be adequately equipped with resources (Dwinaya & Caromawati, 2022; Sulistiyo, 2015). Many people believe that setting up a Language Laboratory is expensive, particularly for private schools, and that the costs do not justify the benefits. Moreover, most students prioritize language knowledge because English is a subject tested in the final examination (Gilakjani & Ahmadi, 2011). As a result of these factors, there is a significant gap between the theoretical knowledge of English and the practical speaking skills among students.

In recent years, there has been a significant increase in internet connectivity in rural areas, which has created an opportunity to develop and implement cost-effective and flexible online English Laboratory tools for language learning. As pointed out by (Lou & Xu, 2015), the integration of internet-based language labs can significantly aid teachers in teaching English and students in learning and using English effectively. The authors have taken the initiative to develop an online language laboratory that utilizes open-source software to create a platform that is both affordable and practical for educational institutions. The authors' software automatically generates a speaking score during dialogues, which is critical for developing practical language skills. The online language laboratory has unique features such as internet-based access, integration with the e-learning system (LMS Moodle), independent pronunciation practice, automatic pronunciation assessment, and video conferencing for tutorials and conversation practice. These features enhance the online language laboratory's effectiveness by providing students with the opportunity to engage in interactive learning activities and receive instant feedback on their performance. The authors believe that the development and implementation of the online language laboratory can significantly enhance language learning outcomes in rural areas and bridge the gap between urban and rural education.

MTs Muhammadiyah Bambang Lipuro's accreditation status is an important indicator of the quality of education it provides. Accreditation from the National Accreditation Board is a validation that the school meets the standard criteria set forth by the board, indicating that it has sufficient resources, qualified staff, and a well-designed curriculum. However, the school's reliance on government and external support highlights the challenges that it faces in maintaining its facilities and keeping up with technological advancements. While the school has a Training Center for Creative Industries (Multimedia) and provides practical rooms for students to hone their skills in creating media, the limited internet access and the need for improved sanitation, clean water, and bathroom facilities show that there is still room for improvement. The school must seek alternative ways to secure funding and support to maintain and enhance its facilities to meet the ever-evolving educational needs of its students. Overall, MTs Muhammadiyah Bambang Lipuro is an important institution in the Pondok Ays Shifa' area, providing quality Islamic education to its students and serving the community for over three decades.

MTs Muhammadiyah Bambang Lipuro's dedication to providing quality Islamic education in Bantul district is commendable. With a team of 19 teachers, the school has been able to expand its admissions to two study groups and has a total of 56 students currently. However, the lack of official education staff, coupled with inadequate sanitation and limited internet access, presents significant challenges to the school's ability to deliver a high-quality education. These challenges could potentially hinder the students' academic performance and limit their opportunities for growth and development. Therefore, it is imperative that the school addresses these issues promptly to provide a conducive learning environment for its students. The practical room for students to hone their skills in video and audio production is a welcome addition to the school's facilities, and with access to the internet within restricted boundaries, it can serve as a valuable resource for students. Nevertheless, the school must invest in improving its internet infrastructure to ensure that students have unlimited access to the internet to support their academic endeavors. Overall, the authors' community service program has the potential to benefit MTs Muhammadiyah Bambang Lipuro by providing innovative solutions to overcome the challenges

faced by the school, and the authors hope that the program's impact will be long-lasting, benefiting not only the school but also the wider community.

MTs Muhammadiyah Bantul is one of the 34 Muhammadiyah schools in Yogyakarta, Indonesia, that is equal to Junior High School (SMP) and Senior High School (SMA). It is accredited B, which is one of the lower grades in the accreditation system. One of the most critical assessments in MTs accreditation is the use of learning media and 21st Century learning models, which are not yet implemented in the school. Despite having quite good IT facilities, the school still lacks an IT-based learning system. The school has one experienced staff and ten young teachers, all of whom have adequate IT learning facilities, such as laptops and Wi-Fi. However, the main problem is related to IT-based learning innovation, which is hindered by inadequate ICT and E-learning infrastructure, problems with internet access, and lack of administrative encouragement (Mohammed Nasser Hassan Ja'ashan, 2020).

As the principal of MTs Muhammadiyah Bantul explained, it is their obligation to innovate and improve the school in various aspects, including learning technology, which has a high score in school accreditation. The reviewer also suggested that schools must implement e-learning, which is an essential innovation in learning systems, learning content, and transformation of knowledge. Catching up on IT-based learning is not only considered critical in addition to accreditation, but also to deal with technological development and the quality of the alumni. However, there is a lack and low transformation of knowledge and technology happening in the school right now. As such, it is crucial to address the factors hindering the implementation of E-learning and innovate the school's learning system to meet the standards of the 21st Century.

The implementation of information technology-based learning is becoming increasingly important in the field of education, as it allows for a more interactive and engaging learning experience for students. However, the high cost of this system often presents a significant obstacle for many schools, particularly those in less developed areas. To address this issue, the authors of this paper have developed a technology that allows schools to access online systems simultaneously, facilitating the sharing of resources and expertise between schools.

Collaboration between schools in this way has the potential to greatly enhance the quality of education in the region, by creating a community of teachers who are able to exchange experiences and ideas. However, the authors have observed a high failure rate in implementing IT-based learning, due to factors such as teacher reluctance to change, lack of facilities, and poor commitment from school principals. To address these challenges, the authors have worked closely with the PDM Bantul, both Elementary and Secondary Education Council, to provide information and support to school principals.

The success of this program depends not only on the availability of facilities and regulations, but also on the motivation of teachers and school principals. The authors recognize that this is a significant challenge and have therefore focused on providing teachers with the necessary motivation and support to implement the program successfully. Ultimately, the goal of this community service program is to create a sustainable and effective IT-based learning system that can be implemented across multiple schools, and the authors believe that this goal can be achieved through collaboration and cooperation between schools and external stakeholders, such as universities.

## 2. METHODOLOGY

The development of 21st Century learning models is essential for the capacity building of teachers to provide quality education. However, the training programs for educators should not only focus on theoretical knowledge but also on practical application. The authors of this study aim to provide a technology-based language laboratory and learning content that encourages practical activities such as conversation and pronunciation. The current school curriculum will be taken into consideration to ensure that the training program aligns with the schools' learning objectives. The community service program will involve the participation of English teachers, who will receive training on the effective use and optimization of IT infrastructure in teaching English.

The absence of language laboratories in schools is a common issue in the Bantul region, where there are no schools with a dedicated language laboratory, according to observations and data. Hence, the authors of this study propose the development of a digital-based and online language laboratory that is integrated with the e-learning system. The system will also record the results of practical learning automatically, freeing up teachers' time for other activities. The project's scope aims to increase participation and encourage collaboration between schools, and the authors plan to expand the program to other Muhammadiyah schools in Bantul, Yogyakarta. The program has received approval from The Board of PDM Bantul, indicating the feasibility of this model as a partner in capacity-building efforts.

Overall, this paper aims to address the challenges of capacity-building among teachers and the development of a technology-based language laboratory to improve language skills in schools. The authors intend to provide

a practical approach to the training program, which will align with the school curriculum and encourage practical activities. The proposed system also intends to increase the efficiency of learning and promote collaboration between schools in the Bantul region. The next section will discuss the methodology used to develop the online language laboratory and the training program for teachers.

Implementing language labs can provide a valuable resource for English language learning, particularly for conversational practice. However, not all schools have the resources to provide such facilities. The authors propose a solution to this problem by developing an Online Language Laboratory that can be shared among schools based on their individual needs and priorities. This model not only supports the school curriculum but also provides opportunities for extra-curricular activities. Often, extra-curricular models are more effective in improving conversational skills, which is a vital aspect of language learning. The online-based system will enable teachers to monitor students' progress in practical activities, such as speaking and pronunciation, and provide valuable feedback. The authors believe that this collaborative approach will enhance the quality of English language learning in the region and provide a framework for other schools to follow. This study aims to evaluate the effectiveness of this model in improving English language learning outcomes and provide insights into the practicality of implementing such programs in resource-limited settings.

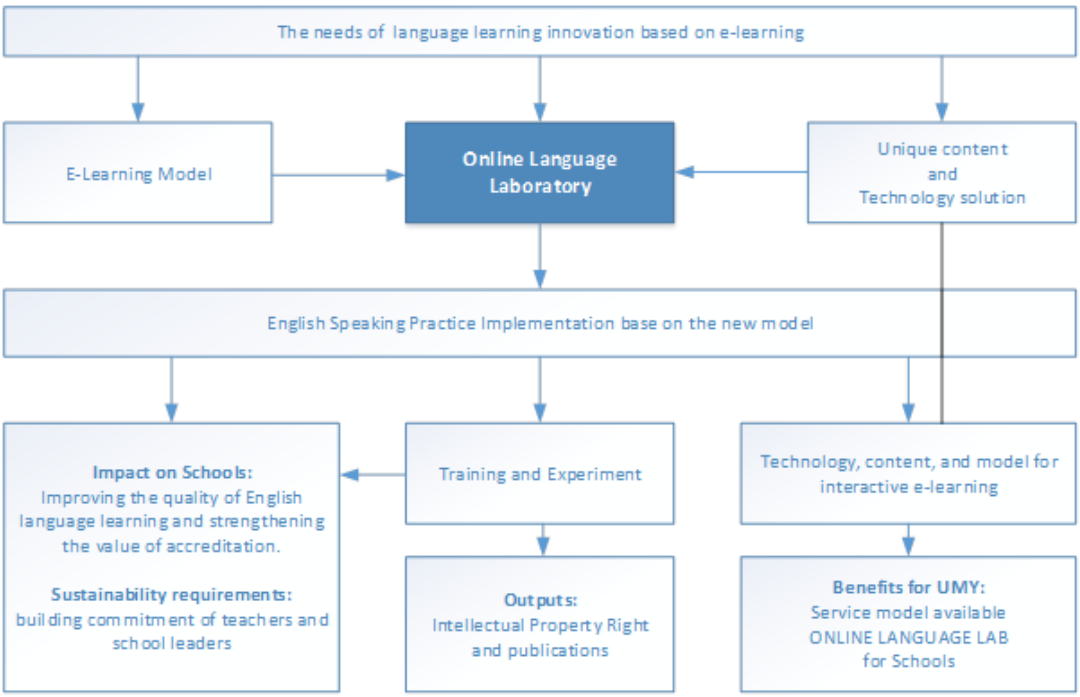


Figure 1. Partner problem solution model or framework

In order to effectively implement their community service program, the authors followed a specific methodological approach. Firstly, they divided the implementation process into two phases: training and experiment. The training phase involved preparing the necessary infrastructure for the e-learning system, including the tools, content, and methods required for the program. This included creating an online-based language laboratory, developing learning content that was practical and activity-based, and providing training to teachers on the effective use of the infrastructure. The authors provided training on the concept, operation, use, and optimization of the e-learning system to ensure that teachers had a thorough understanding of the program. Additionally, they also provided concepts for the effective technology-based language practice to enhance the students' language skills.

The experiment phase of the program involved a trial English course for interested students. This was done to assess the effectiveness of the program and evaluate the progress of the students. The authors aimed to create an engaging and interactive learning environment that focused on practical activities, such as conversation and pronunciation, to enhance the students' speaking skills. The e-learning system was designed to automatically record the results of practical learning, thereby eliminating the need for manual scoring. This allowed teachers to focus on providing guidance and feedback to students in real-time.

To ensure the success of the program, the authors also sought permission from The Board of PDM Bantul and collaborated with the principals of the schools involved to create a model of service that would meet their specific needs. The authors plan to increase the scope of the program to other Muhammadiyah schools in Bantul,

Yogyakarta, and make the online language laboratory accessible to schools according to their priority needs. This approach aims to support the curriculum or extra-curricular activities that focus on enhancing students' speaking ability. Overall, the authors' community service program was based on a carefully planned and executed methodology to provide effective training and experiment phases that can significantly enhance students' language skills.

A. E-Learning Development

The method employed in this study involved the development of an E-Learning system, which consists of both hardware and software components. The hardware component includes laptops, computers, and headsets, which were used to facilitate the learning process. The software component, on the other hand, includes the Moodle LMS and Moodle App, which were used to manage the learning process. To ensure that the system was effective in supporting learning, the authors developed interactive modules that were adapted to the specific material determined by the teacher. These modules were designed to be engaging and interactive, making it easier for students to learn and retain information. The learning plans were also tailored to the specific needs of the students, considering the curriculum and the learning objectives. In total, the authors developed three sets of interactive modules, which are detailed in Table 1. The experiment involved the implementation of the E-Learning system in an English course for interested students, and the results were analyzed to determine the effectiveness of the system in supporting learning.

**Table 1.** Interactive e-learning modules

| No | Modules | Topics | Specification |
|---|---|---|---|
| 1 | Jitsi Lab | Speaking, pronunciation, reading, conversation | Integrating of LMS Moodle API dan Jitsi Meet API, Moodle desktop app, and Moodle android mobile app. |
| 2 | Pronunciation Lab | Reading and Pronunciation | Using LMS Moodle API, Speech-to-Text, p5.js library, Text-to-Speech Responsive. Voice library, Moodle desktop app, and Moodle android mobile app. |
| 3 | Conversation Lab | Speaking, pronunciation, reading, conversation, dialog programming. | Using LMS Moodle API, Speech-to-Text, p5.js library, Text-to-Speech Responsive. Voice library, Moodle desktop app, Moodle android mobile app, and Rive script library. |

B. Experiment

The experiment was conducted to evaluate the effectiveness of the Online Language Laboratory in improving students' English language proficiency. The study was conducted for two months at MTs Bambang Lipuro Bantul, with a total of 20 meetings. The first meeting was dedicated to administering a pre-test to measure the baseline level of students' English proficiency. The last meeting was a post-test to evaluate the effectiveness of the program.

The course was designed using a combination of online and offline blended learning approaches, with 18 meetings conducted online and two offline meetings. The course used the interactive modules developed by the authors, as shown in Table 2. The authors provided teachers with training and guidance on how to use the modules to deliver effective language instruction.

**Table 2**. Course activities and themes

| Meeting | Online (Moodle App) | Offline (60 minutes) |
|---|---|---|
| 1 | Learning using module | Pretest (simple conversation) |
| 2 | Reading: Alphabet | Hi, how are you? |
| 3 | Reading: 'a' sound | Assignment 1 |
| 4 | Reading: 'b' and 'v' sound | My name is Adi |
| 5 | Reading: 'p' and 'b' sound | Assignment 2 |
| 6 | Reading: 'ei' sound | What time is it now? |
| 7 | Reading: number 1-100 | Assignment 3 |
| 8 | Reading: number 100-1000 | My family |
| 9 | Reading: number 1000-1 million | Assignment 4 |
| 10 | Reading: basic math | My day |
| 11 | Reading: people and money | Assignment 5 |
| 12 | Mispronouncing 1 | My favorite food |
| 13 | Reading | Assignment 6 |
| 14 | Reading: Fruits | I love swimming |
| 15 | Reading: Food and drinks | Assignment 7 |
| 16 | Reading: weather | My plan |
| 17 | Reading: gardening tools | Assignment 8 |
| 18 | Formal conversation | My unforgettable experience |
| 19 | Telephone conversation | Assignment 9 |
| 20 | Mispronouncing 1 | Posttest (Simple conversation) |

At the end of the program, the authors distributed a questionnaire to the students to evaluate their experience and satisfaction with the Online Language Laboratory. The survey assessed their attitudes towards using technology in language learning, the usefulness of the program, and the effectiveness of the interactive modules. The authors analyzed the data collected from the pre-test, post-test, and survey to assess the impact of the Online Language Laboratory on students' language proficiency and their perceptions of the program.

## 3. RESULTS AND DISCUSSION

### 3.1 Preparation

In preparation for the training, the authors took steps to ensure that the technology and learning materials were in place. This included setting up the server, content, and practicum models. A module template was developed and tested to ensure that it was suitable for module production. However, due to time constraints and the complexity of compiling learning modules, the authors decided to order a learning module for higher-level students with professional experience. The authors carefully tested each module to avoid errors and inconsistencies in menu, format, and content. During the experiment, the authors used the System Usability Scale (SUS) to assess user response. The SUS is a widely recognized and cost-effective tool for evaluating the usability of websites, interactive systems, and other digital products (Brooke, 1995). A total of 50 students participated in the training, and they were asked to complete the SUS questionnaire at the end of the program. The authors recognize the importance of user interface design in achieving learning objectives, as it is closely linked to the psychological aspects that influence learning outcomes. Therefore, the interface was designed to be attractive, easy to use, and in line with the hierarchy of thought (Kapenieks, 2013).

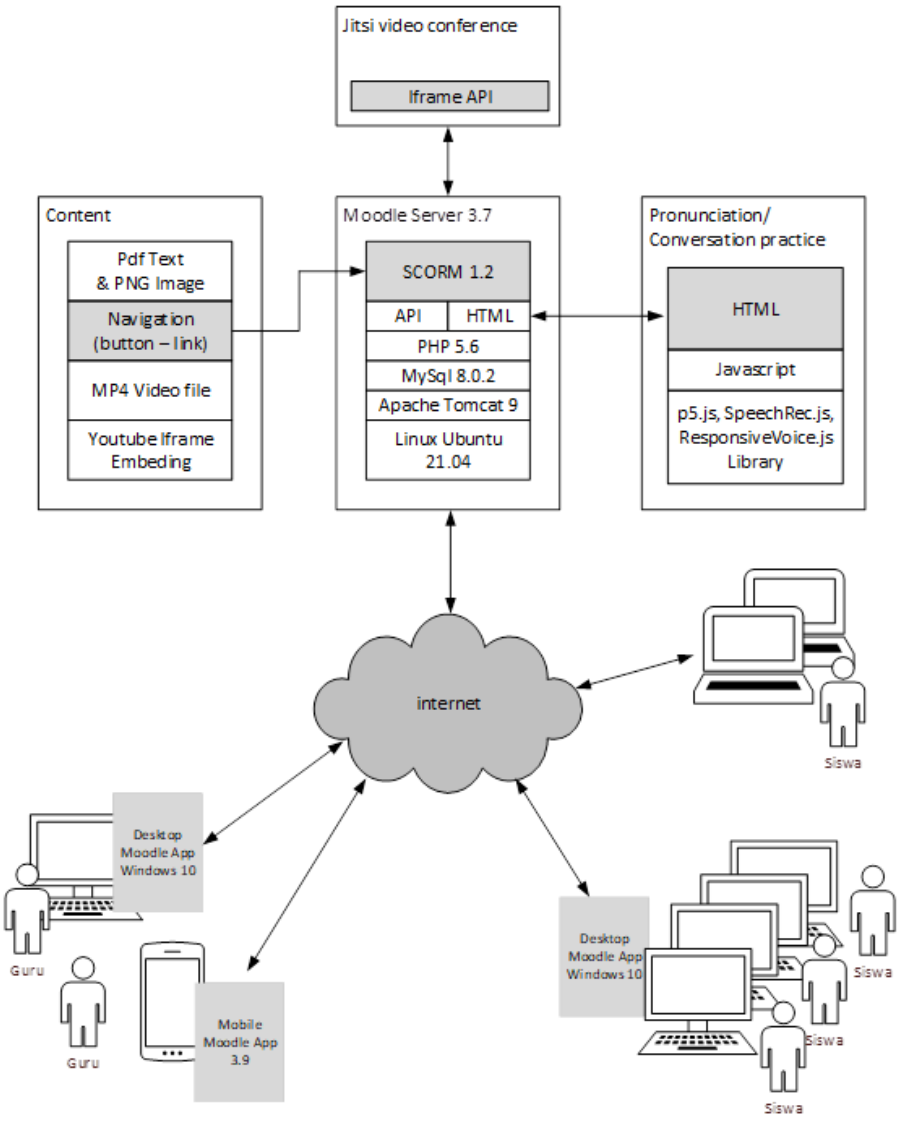


Figure 2. The online language laboratory's architecture

The authors have created an innovative e-learning system that provides learners with access to a variety of interactive tools for both asynchronous and synchronous learning. These tools allow learners to practice pronunciation and speaking skills independently, as well as engage in live conversations with teachers. The system automatically evaluates the learner's fluency scores during pronunciation and conversation practice, providing immediate feedback to the learner. Through the integration of an LMS, interactive modules, and application programs, the system functions as an online language laboratory, offering students an immersive and dynamic learning experience. The use of this technology has shown significant potential for enhancing language learning outcomes and promoting independent learning. Further research can be conducted to explore the effectiveness of this system in different contexts and with diverse student populations.

The online language laboratory's architecture, as depicted in Figure 2, embodies the concept of technology integration, learning models, content, and implementation, which makes it a potential model for dissemination to other educational institutions beyond the community service program where it was implemented. The authors aimed to create a user-friendly interface that both students and teachers could easily comprehend and navigate, notwithstanding the advanced technology used in the system's development. The e-learning system boasts of up-to-date information technology tools such as LMS, Video Conference, HTML, CSS, JavaScript Library, Voice recognition, Text-to-voice converter, and YouTube video player, which underscores its innovative design. Additionally, the system uses the SCORM version 1.2 standard e-Learning module and incorporates various APIs such as Moodle, YouTube, Jitsi Iframe, and Google APIs, which enhances its dynamic programming. The system's sophisticated design and ease of use make it a robust tool for enhancing language learning and education.

The user interface presented in Figure 3 represents a significant step towards facilitating sophisticated feedback mechanisms for language learners through online reading skill tutorials. By utilizing the p5.SpeechRec.js library, the system incorporates a sophisticated scoring system that evaluates users' speech levels of confidence and provides immediate feedback on pronunciation accuracy. This feature has tremendous potential to improve language learners' pronunciation and confidence by allowing them to assess and correct their areas of weakness in real-time. Additionally, the system's side-by-side comparison of learners' pronunciation with the correct pronunciation encourages students to be more mindful of their speech and work towards accuracy. The emphasis on autonomous learning in contemporary language education (Hlásná et al., 2017) makes this feedback mechanism particularly valuable, as it empowers learners to take control of their learning process and receive feedback that is personalized to their unique needs. Overall, the incorporation of technology-enabled language instruction in promoting effec tive and engaging learning experiences is a promising development in language education, and the potential of this approach should be explored further.

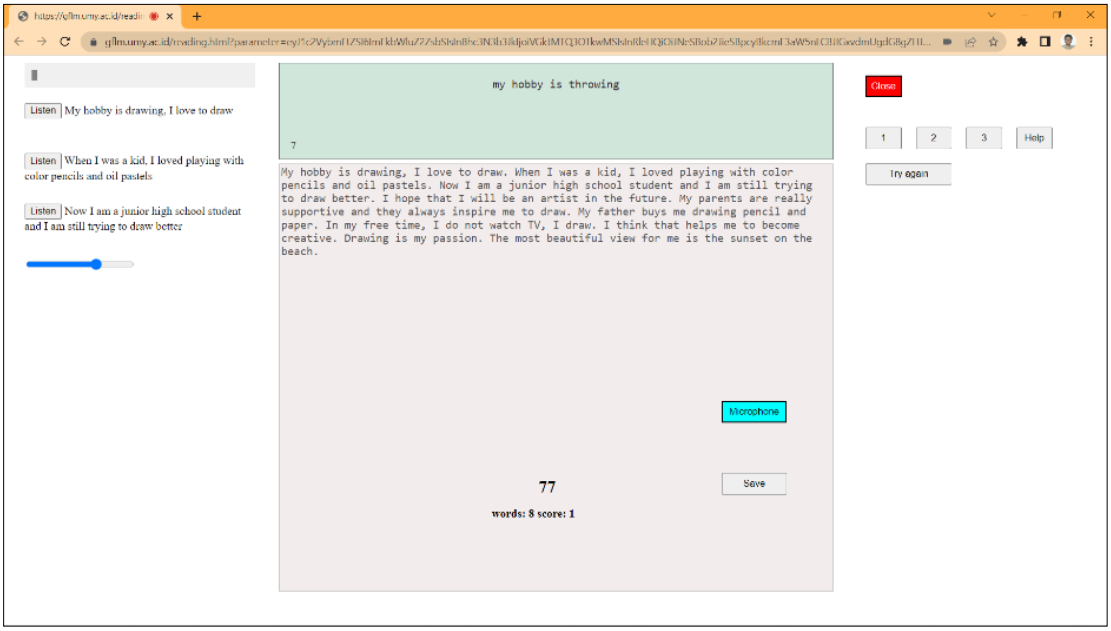


Figure 3. Reading skill interface

The dashboard for asynchronous learning, as illustrated in Figure 4, represents a pioneering approach to e-learning that reimagines the relationship between students and the learning content, as well as between students and teachers. By leveraging the capabilities of the YouTube player and YouTube API, this model empowers students to access a vast collection of educational videos and tailor their learning experience to their individual interests and learning styles. The integration of interactive elements in this e-learning model is a

critical component that enhances student engagement and promotes optimal learning outcomes. As (Yordanova et al., 2015) suggest, interactive elements are essential learning objects that create a more engaging and dynamic learning environment for both students and educators. Furthermore, (Violante & Vezzetti, 2015) emphasize the centrality of interactivity in e-learning models, highlighting its capacity to foster active engagement, critical thinking, and information retention. Therefore, the incorporation of interactive elements in e-learning models should be prioritized to promote the effectiveness of online learning programs and to meet the evolving needs of contemporary learners.


Figure 4. Tutorial Video Using YouTube API

At the outset of the community service program, the authors conducted a comprehensive meeting with their partners, the Middle Elementary Education Council and the Library and Information Council of Muhammadiyah Board, to collaboratively establish the program's objectives and its sequential activities. In addition to discussing the core program implementation, which included training for teachers and socialization for school principals, the authors observed a marked increase in technology usage in most schools. By providing laptops, computers, and improving internet connectivity, schools had recognized the vital role of technology in education and were implementing programs designed to improve computer literacy for both teachers and students. This initiative is in line with (Davies & West, 2014) recommendations for the integration of technology in education, which include increasing access to educational technologies, using technology for instructional purposes, and improving the effectiveness of technology use to facilitate learning. The authors were pleased to see that the schools were already taking steps towards achieving these goals, and they hoped that their program would further support them in their efforts to integrate technology effectively into the education system.

### 3.2 Training for Teacher

The IT training program for English teachers in Muhammadiyah schools under the PDM Bantul marks a significant step towards the successful implementation of the online language laboratory. The program was designed to cater to the needs of the English teachers, who were introduced to the online language laboratory and its features and trained on how to use it. The technical aspects of the e-learning system were given special attention during the training, as they are essential for effective teaching and learning in the online environment. The success of the training program is a testament to the authors' careful planning and execution of the program, which ensured maximum benefits for the English teachers. The authors' efforts to organize a special training program for partner English teachers are commendable and demonstrate their commitment to ensuring successful implementation of the e-learning system in their schools. The authors hope that the results of this implementation will serve as a valuable reference for other schools, particularly in Bantul regency, to benefit from the e-learning system's advantages. The successful completion of this IT training program for English teachers is a significant milestone towards building a robust and efficient online language laboratory that will enhance the quality of education in Muhammadiyah schools.

Figure 5. Teacher training

Before conducting the training, the authors conducted a pre-training survey to assess the participants' opinions and knowledge about e-learning technology for the language laboratory. A post-training survey was also conducted to evaluate the impact of the training. The survey consisted of two parts: the device survey using the System Usability Scale (SUS) and the benefits survey. The authors recognize the importance of ensuring sustainability in community service projects, and as such, they plan to involve the Primary and Secondary Education Council and the PDM Bantul Library and Information Council in the project. The authors aim to discuss the training results with the Education Council to gain their commitment and input on how to encourage principals and teachers to continue using the technology. In addition, the authors plan to discuss with the Library and Information Council to coordinate the cooperation between PDM and UMY to ensure the technology's continued use for the next five years. To achieve online language lab sustainability, cross-functional collaboration is necessary to accommodate different and sometimes conflicting perspectives (Pulasthi & Gunawardhana, 2016). Thus, the authors recognize the importance of involving relevant stakeholders to ensure the sustainability of the project.

The System Usability Scale (SUS) survey was conducted to evaluate the effectiveness of the e-learning system in this study, with a score of 74% indicating a good overall rating (Peres et al., 2013)The results revealed that the system was user-friendly and easy to use, as reported by both students and teachers. Feedback from users showed that the system provided clear and understandable information. However, students expressed difficulty in understanding some of the content and found the inconsistent menu positions to be a minor issue. Despite the system's ease of use, teachers required further training to familiarize themselves with the system's functions fully.

One significant suggestion for improvement was to enable the students to access the system using their mobile phones. Smartphones have become an essential part of people's daily lives due to their multifunctional features (Zahir Wali & Ehsan Omaid, 2020). Learners today demand relevant, personalized, self-paced, and mobile-friendly content, which can be accessed at any time and from anywhere (Khusanov & Sulaymonov, 2018). The ability to access the system through mobile devices would offer learners the flexibility to learn at their convenience, allowing them to study anytime and anywhere. This feature would be particularly beneficial for learners who cannot attend face-to-face classes or who have limited access to a desktop computer.

### 3.3 Experiment

After the initial experiment, the authors found that the students' speaking ability remained lacking even with the use of the online language lab. This may be due to the fact that the students were only able to use the lab at home with their smartphones, which may not have been the most effective learning environment. In addition, the sudden implementation of online classes without face-to-face classes may have contributed to the decreased effectiveness of online labs. According to (Saminathan, 2021), this is a common problem in online learning across the world. To address this issue, the authors plan to make changes to the technology used in the

online language lab to improve its flexibility and ensure successful implementation. The flexibility characteristic of technology is essential because it allows for adjustments and changes to be made to the business process (Nelson et al., 1997). In addition, the authors will explore new ways to incorporate face-to-face interaction into the online language lab to enhance the students' speaking ability. This may include virtual classroom sessions or other forms of synchronous learning. The authors believe that these changes will improve the effectiveness of the online language lab and help students to develop their speaking skills more effectively.

## 4. CONCLUSION

In summary, this study has shown that incorporating an e-learning system as an online language lab, whether through a mobile or desktop application, is not a challenging task for teachers in two training programs. Technical issues mostly revolved around software and application updates, and all provided functions worked properly. These findings indicate that the online language laboratory is technically feasible and can be implemented as part of the curriculum or as an extracurricular activity. As a next step, the authors plan to develop an implementation model, module, and supporting book. It is recommended that the PDM Bantul Education Council establish a long-term support system, such as policies, to ensure optimal utilization of this Online Language Lab. By doing so, the online language laboratory can be a valuable tool for improving language proficiency among students and supporting the development of language learning strategies in educational institutions.

## 5. ACKNOWLEDGEMENT

The authors gratefully acknowledge the support and resources provided by the Research and Innovation Institute of Universitas Muhammadiyah Yogyakarta for the completion of this research on Growing Self-Directed Learning (SDL) Using Gamma Feedback Learning Model (GFLM). The authors also extend their heartfelt gratitude to the participating schools and teachers of M.Ts Bambang Lipuro Bantul for their invaluable assistance and cooperation in conducting this study. Without their cooperation, this research would not have been possible.

## REFERENCES

Brooke, J. (1995). SUS: A Quick and Dirty Usability Scale. In *Usability Eval. Ind.* (1st ed., Vol. 189). CRC Press.

Davies, R., & West, R. E. (2014). Technology Integration in Schools. *Handbook of Research on Educational Communications and Technology*, 841–853.

Dwinaya, L., & Caromawati, C. (2022). Language Labs: The Loop of The Features, Materials, And Functions. *IEFLJ) Indonesian EFL Journal*, *8*(1), 33–44. https://doi.org/10.25134/ieflj.v8i1.5585

Fajemidagba Ayodele, M. (2020). The Influence of Standard Language Laboratory on the Effective Teaching and Learning of English Language in Nigeria. *Language in India* , *20*(7), 164–180. https://web.s.ebscohost.com/abstract?site=ehost&scope=site&jrnl=19302940&AN=144840783&h=6n08u8O6KLNtbreUzLyPoZ7%2f8sloHHdtfk0oEz173z2h6tA1i6z3CLu05bU%2fPDlyohqNB1DpArPM2o99PUNLUQ%3d%3d&crl=c&resultLocal=ErrCrlNoResults&resultNs=Ehost&crlhashurl=login.aspx%3fdirect%3dtrue%26profile%3dehost%26scope%3dsite%26authtype%3dcrawler%26jrnl%3d19302940%26AN%3d144840783

Gilakjani, A. P., & Ahmadi, M. R. (2011). A Study of Factors Affecting EFL Learners' English Listening Comprehension and the Strategies for Improvement. *Journal of Language Teaching and Research*, *2*(5). https://doi.org/10.4304/jltr.2.5.977-988

Hlásná, P., Klímová, B., & Poulová, P. (2017). Use of Information and Communication Technologies in Primary Education-A Case Study of the Czech Republic. In *International Electronic Journal of Elementary Education* (Vol. 9, Issue 3). www.iejee.com

Kapenieks, J. (2013). User-friendly e-learning Environment for Educational Action Research. *Procedia Computer Science*, *26*, 121–142. https://doi.org/https://doi.org/10.1016/j.procs.2013.12.012

Khusanov, K., & Sulaymonov, B. (2018). Developing user interface for an e-learning platfor. *ACTA of Turin Polytechnic University in Tashken*, *N4*, 11–18.

Krishna, D. (2021). Importance of Language Laboratory in Developing Language Skills. *JURNAL ARBITRER*, *8*(1), 101. https://doi.org/10.25077/ar.8.1.101-106.2021

Lou, Y., & Xu, P. (2015). Integrating Internet-Based Language Laboratory in Teaching Intensive Reading at Non-English-Majored-Graduate Level. *Creative Education*, *06*(14), 1610–1615. https://doi.org/10.4236/ce.2015.614162

Mohammed Nasser Hassan Ja'ashan, M. (2020). The Challenges and Prospects of Using E-learning among EFL Students in Bisha University. *Arab World English Journal*, *11*(1), 124–137. https://doi.org/10.24093/awej/vol11no1.11

Nelson, K. M., Nelson, H. J., & Ghods, M. (1997). Technology flexibility: conceptualization, validation, and measurement. *Proceedings of the Thirtieth Hawaii International Conference on System Sciences*, *3*, 76–87 vol.3. https://doi.org/10.1109/HICSS.1997.661572

Peres, S. C., Pham, T., & Phillips, R. (2013). Validation of the System Usability Scale (SUS): SUS in the Wild. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, *57*(1), 192–196. https://doi.org/10.1177/1541931213571043

Pulasthi, L. K., & Gunawardhana, D. (2016). Using Multimedia as an Education Tool. *9th Annual International Conference on Computer Games Multimedia & Allied Technologi*. https://doi.org/10.5176/2251-1679_CGAT16.15

Saminathan, V. (2021). Problem s of Online Classes. *International Journal of Academic Research Reflectoor, 9*, 1–4. https://doi.org/10.6084/m9.figshare.13573550

Sulistiyo, U. (2015). *Improving English as a Foreign Language Teacher Education in Indonesia: The Case of Jambi University*. RMIT university.

Violante, M. G., & Vezzetti, E. (2015). Virtual interactive e-learning application: An evaluation of the student satisfaction. *Computer Applications in Engineering Education*, *23*(1), 72–91. https://doi.org/10.1002/CAE.21580

Yordanova, L., Angelova, N., & Kiryakova, G. (2015). Interactive Models Of E-Learning For Active Learning. *ARTTE Applied Researches in Technics, Technologies and Education*, *3*, 336–343. https://doi.org/10.15547/artte.2015.04.008

Zahir Wali, A., & Ehsan Omaid, M. (2020). The Use of Smartphones as an Educational Tool in the Classroom: Lecturers' Perceptions. *Lecturers' Perceptions. The Use of Smartphones as an Educational Tool in the Classroom*, *15*(16), 238–247. https://doi.org/10.3991/ijet.v15i16.14179

Zein, S., Sukyadi, D., Hamied, F. A., & Lengkanawati, N. S. (2020). English language education in Indonesia: A review of research (2011–2019). *Language Teaching*, *53*(4), 491–523. https://doi.org/10.1017/S0261444820000208