# Training Vocational High School Students in Audio-Based Multimedia to Support English Language Learning

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## Abstract

**Background:** In the 21st-century educational context, integrating digital literacy and multimedia is essential for both students and teachers. However, vocational school students, particularly those at SMK Muhammadiyah 2 Palembang, face significant challenges in effectively utilizing audio-based multimedia tools to support their learning process.

**Aims:** This community service activity aims to enhance students' ability to apply audio media effectively, thereby improving the quality and engagement of the learning process. The focus is on equipping students with practical skills that foster deeper and more interactive learning experiences through audio-based media.

**Methods:** The approach used in this activity was hands-on practice supported by qualitative data collection. The training took the form of a workshop, involving 21 second-grade students of SMK Muhammadiyah 2 Palembang. In addition to demonstrations, direct practice sessions were conducted, emphasizing the use, implementation, and integration of audio media in learning. A Likert-scale questionnaire consisting of 18 indicators across four assessment areas was used to evaluate the activity's effectiveness.

**Results:** Quantitative data analysis shows high levels of participant satisfaction, with most responses categorized as "Agree" or "Strongly Agree." Key aspects such as the relevance of content, clarity of delivery, and motivation to adopt new media received average scores above 4.45 on a 5-point scale.

**Conclusion:** The training significantly improved students' understanding, confidence, and motivation in using audio-based multimedia tools. The activity effectively strengthened students' digital literacy and promoted sustainable pedagogical innovation within the school community. Audio-based multimedia training proved to be a valuable tool in enhancing the learning experience and supporting 21st-century education goals.

## A. Introduction

Over the past twenty-first century, the educational landscape has undergone drastic changes, and digital literacy has become a vital competency for both teachers and students (Peng & Yu, 2022). Through technological advances, it is increasingly important to utilize digital tools, especially multimedia, in the English teaching and learning process. As a result, audio-based multimedia tools, such as audio recordings and podcasts, provide adaptable pronunciation and entertaining approaches to support and improve motivation and vocabulary (Alhazmi, 2024; Teng, 2023). These tools promote specific comprehension and understanding of English material, create individualized instruction, and cater to the diverse learning styles of various students (Dhivya et al., 2023).

Multimedia integration improves the quality of teaching instruction in vocational education, particularly by establishing a vocational high school category. Multimedia can provide work experience and improve practical skills (Cheng & Liu, 2021). In addition, this can improve students' ability to engage in self-learning and creative thinking (Deng, 2024). Despite the benefits of audio-based multimedia, many vocational schools, including SMK Muhammadiyah 2 Palembang, still lack structured training programs that can help students effectively adopt and implement these tools in their learning practices. Therefore, students from vocational high schools need to incorporate the use of multimedia in their learning. However, due to the lack of multimedia implementation, exposure to the English language, the introduction of insufficient training, and a lack of confidence in students' ability to choose and implement proper audio-based technologies. Most students still struggle to implement the learning process effectively and smoothly. According to Taha et al. (2023) the advancement of technologies used still poses serious issues for students. Therefore, the activity of community service about audio-based multimedia is a proper agenda for school students. The purpose of this activity is to improve students' ability in using audio-based multimedia in the classroom process by providing socialization and explanations to the students in a vocational high school. This program aimed to overcome the digital literacy gap for students by encouraging the adoption of cutting-edge learning strategies, which created the need for education in the twenty-first century through training and cooperative practice in the school environment.

Most students at the vocational high school at Muhammadiyah 2, Palembang, had difficulties to overcome the struggle of multimedia integration especially audio-based technologies into the learning process. The preliminary observation which revealed to the digital literacy levels among students remain low, then resulting the limitation of using and understanding of internet-based tools in education. Nowadays, through the demand for technology integration in vocational education, the implementation practice is crucial for facing these issues. There was still a lack of digital literacy in almost all students. Particularly, those professionally trained before the internet usage era are one of the core challenges. It means there were still low understanding of internet user. The selection, usage, and application of audio media, like interactive audio content, podcasts, and pronunciation apps, are still rarely used by some students. According to Asmi et al. (2019) and Silva et al. (2024) audio-based multimedia can improve students' learning performance and language proficiency. Besides, high-quality speakers, headphones, or stable internet connections are still becoming problems when using these tools efficiently in classroom settings.

A common major obstacle is the limited use of audio-based material to support learning English (Rovithis et al., 2019). In reality, audio-based training has been offered, but in some cases, there were still some schools that did not implement it. The students explored a few programs to improve the effective learning processes through audio technology in the classroom. As a result, most students doubt the usefulness of these tools, which means the needs are time-consuming or unrelated to vocational courses. These issues highlight the need for assistance and practical workshops that present low-barrier and easy practice of audio-based teaching as solutions that align with the curriculum of schools' requirements for the students.

In 21st-century education, the importance of audio-based resources in the learning process for improving students' engagement is becoming increasingly complex to adopt (Saputra et al., 2023). Podcasts and audio recordings, which utilize explanations and storytelling, are examples that can enhance the learning process (Besser et al., 2022; Ferrer et al., 2021). The implementation of audio media may contribute to developing an inclusive learning environment (Li, 2024). Additionally, it accommodates and facilitates various learning preferences. Specifically, most auditory learners argue that audio-based learning methods are essential to be used in conjunction with other methods, such as visual or textual techniques (Al-Maroof et al., 2022). Therefore, audio technologies effectively engage the content of vocational high schools where most students also frequently have various learning styles. Therefore, audio technologies effectively engage the content of vocational high schools, where most students also frequently have various learning styles (Zhao, 2021). Thus, both schools and teachers can modify the learning method through sounds, such as audio-based learning. Sounds improve teaching and learning English material effectively through tone variation and voice modulation from audio-based learning practice (Lagarrigue et al., 2021).

Additionally, audio learning may help students develop a deep understanding and create insight into the material, making it easier to remember in the long term (Bausells-Espín, 2022; Michelsanti et al., 2021). Through audio explanations, students gain insight into learning, as audio-based learning tends to create an enjoyable atmosphere while providing hands-on experience in various disciplines (Lagarrigue et al., 2021). Therefore, guidance from the students' and teachers' instruction is needed to process and practice every step of the digital procedure.

Furthermore, audio content-based learning can make the learning process accessible anywhere and anytime (Suresh & Srinivasan, 2020). Combining English language skills with learning through listening activities enables students to learn continuously and independently (Kang & Lee, 2020; Wahyuni & Hartono, 2022). Using audio-based resources at the vocational high school of Muhammadiyah Number 2, Palembang, improves the quality of the English learning process, which prepares students for authentic learning. Therefore, digital learning and communication are essential for increasing information access in the educational process. Furthermore, incorporating audio-based techniques into the learning process is a significant step toward more equitable and effective education.

Enhancing the ability of students at the Vocational High School of Muhammadiyah Number 2, Palembang, to utilize audio-based media makes learning more effective and efficient. The main purpose of this community service activity is to understand and use multimedia learning through audio-based materials for high school students at Vocational High School Number 2, Muhammadiyah Palembang. The curriculum needs to incorporate dynamic activity practices, such as student-centred learning environments, by socializing students to theoretical knowledge and implementation skills through audio-based content in the learning process. Through creative audio integration, this activity is expected to support educators in meeting diverse learning needs, enhance student engagement during lesson activities, and improve overall instruction and learning outcomes.

This activity aims to produce benefits for both students and the school institution by enhancing the use of technology. Then, the routine instructional capacity practice should be explored by both teachers and students. Through this action, students can gain a deep understanding of learning by practicing this medium. Particularly, auditory-based learning enables learners to learn English enthusiastically and adequately through the use of audio-based learning materials. Utilizing multimedia tools to support instructors may help schools enhance the overall quality of education. Then, teachers and students can develop teaching and learning methodologies that align with the digital literacy standards of the twenty-first century. Finally, this activity improves the school's goal of having competitive graduates who are tech-savvy and able to participate fully in various learning settings.

## B. Methods

A participatory approach was used in this community service activity by incorporating various activities and sessions, such as workshops and practical mentorship for vocational school students. The activity was organized in the vocational high school of Muhammadiyah number 2, Palembang, engaging 21 students at the second-grade level. The strategy prioritizes the main proposed community empowerment framework, such as enhancing digital literacy and instructional capacity by incorporating audio-based multimedia into learning practices.

The program consisted of three main practices: initial assessment, implementation, and evaluation. To inform the teachers' needs assessment step for implementing multimedia in their teaching practice, the community service team conducted informal interviews and a brief questionnaire to gauge participants' familiarity with digital tools, including audio-based learning media. This diagnostic phase enabled facilitators or community service members to create proper materials and sessions aligned with the teachers' technical readiness.

**Table 1.** The Method of Community Service Implementation

| No | Stages | Activity Description | Objective |
|---|---|---|---|
| 1 | Needs Identification | Observation, interview, and survey preparation | Identifying students' readiness and need |
| 2 | Training and Socialization | The practice and implementation of community service | Explaining the pratice of audi-based media used |
| 3 | Activity Evaluation | Assess the Pre- and Post-tests through Likert-scale questionnaire | Evaluating impacts of activity |

The implementation step was practiced in a one-day workshop, which included practical training where students were introduced to diverse audio technologies, such as podcast examples and basic mobile audio recorders. They were instructed to follow each step of the audio-based material instruction while asking

about specific steps that confused them. Emphasis was placed on accessible technology to ensure practicality and sustainability.

The pre-test and post-test approaches were also utilized to evaluate the activity's impact, employing a structured assessment form. This questionnaire used a 5-point Likert scale to measure students' responses regarding the clarity of materials, delivery methods, engagement, and perceived benefits. Data were gathered from various aspects of the questionnaire, including the quality and relevance of the provided materials, delivery and teaching methods during the activity, community empowerment for the use of audio-based multimedia, personal benefits, and readiness. The results were evaluated descriptively to assess the enhancements of students' capacity and understanding of areas requiring additional support and improvement in further learning practice activities.

**Table 2** The distribution of questionnaire items

| No | Aspects | Question Number | Number of Question |
|----|---------|-----------------|---------------------|
| 1 | Quality and relevance of the provided materials | 1,2,3,4,5 | 5 |
| 2 | Delivery and teaching methods during the activity | 6,7,8,9,10 | 5 |
| 3 | Community empowerment for the use of audio-based multimedia | 11,12,13,14 | 4 |
| 4 | Personal benefits and readiness | 15,16,17,18 | 4 |

After the training session activation, all participants in this software were given access to complete the instrument questions. Then, after those responses were collected, the data underwent processing to facilitate in-depth interpretation through a questionnaire focused on progress. The analysis step employed a quantitative descriptive method, which involved examining the questionnaire responses using a Likert scale format. These responses provided insight into participants' evaluations and highlighted areas that require enhancement. The primary purpose of this descriptive statistical analysis was to generate a summary and meaningful conclusions. The collected data drew valuable insights regarding participants' views on various aspects of the community service activity. The analysis was conducted systematically through several key steps.

Furthermore, there was some characterization of each response preference on the Likert scale, which ranges from 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), to 5 (Strongly Agree), conducted to explain the data further. To perform a questionnaire response analysis, the researchers assessed the Likert scale scores for each questionnaire using the mean score.

## C. Results and Discussion

## 1. Results

The socialization and practice of audio-based **multimedia** at Muhammadiyah number 2 Palembang Vocational High School.



**Figure 1.** Introduction to the Implementation of Multimedia at the Vocational High School of Muhammadiyah 2 Palembang

The training began with an introduction to or socialization of the benefits of technology in the learning process. The community service activity team introduced the various media that can support the learning process. Then, I began to provide insight into audio-based technology for classroom learning activities. In the ongoing process, not all students, as participants, are blind or lack understanding of the use of technology in the learning process. However, some have also practised or used technology during the learning activities. A few still did not understand or had no specific experiences using audio technology, such as podcasts or audio via cell phones, in the learning process.

After the socialization and explanation to the participants, the team also demonstrated and practiced authentic examples of audio-based learning, such as podcasts, YouTube education, and audio recordings from mobile phones, to provide additional lesson instruction to the students. However, during the process, the participants practiced answering the task through audio-based media. In that session, the participants were provided with some insights that they must prepare tips on basic requirements for using audio media, such as internet stability and personal mobile phones, before engaging in the learning practice.

After the socialization was presented and the participants understood it properly, they were asked to share their insights about this socialization and then asked questions about its practice. Before the community service members answer these questions, all students are allowed to provide additional information or respond to questions from other members. The activity processes smoothly in each stage, from opening to closing, during the ongoing activity. This is evident from the participants' enthusiasm in coming forward and presenting their respective works. Then, before the activity was closed, the community service activity teams also distributed questionnaires in the form of an online survey, which participants completed regarding their experiences in participating in the activity.

**Table 3.** Frequency and Percentage Data Table

| Question | Likert Scale | | | | |
|---|---|---|---|---|---|
| | 1 (SD) | 2 (D) | 3 (N) | 4 (A) | 5 (SA) |
| 1 | 0.5% | 1% | 2.5% | 45% | 51% |
| 2 | 0% | 0.5% | 3% | 47.5% | 49% |
| 3 | 1% | 1.5% | 2% | 48% | 47.5% |
| 4 | 0% | 1% | 2% | 50% | 47% |
| 5 | 0.5% | 0.5% | 3% | 44% | 52% |
| 6 | 0% | 0.5% | 1.5% | 48% | 50% |
| 7 | 1% | 1% | 2% | 46% | 50% |
| 8 | 0.5% | 1% | 2.5% | 49% | 47% |
| 9 | 1% | 1% | 1% | 45% | 52% |
| 10 | 0% | 1% | 2% | 46% | 51% |
| 11 | 0.5% | 1.5% | 2% | 47% | 49% |
| 12 | 1% | 1% | 3% | 43% | 52% |
| 13 | 0.5% | 0.5% | 1.5% | 48.5% | 49% |
| 14 | 0% | 1% | 2% | 47% | 50% |
| 15 | 1% | 1% | 2% | 46% | 50% |
| 16 | 0.5% | 1.5% | 2% | 44% | 52% |
| 17 | 1% | 0.5% | 3% | 45.5% | 50% |
| 18 | 0.5% | 1% | 2.5% | 46% | 50% |

The indicator results from this research used a Likert-scale questionnaire, which showed a strong positive response through 18 questionnaire indicators. The highly significant response of respondents was predominantly in the *'agree' option,* with a score of (4), and *strongly agreed* with the point at (5). For nearly all other items, the combined percentages reached 90%. For example, Question 1 received 96% agreement, reflecting that the training materials were highly relevant to the students' needs and challenges. Similarly, Questions 5, 9, and 12 achieved combined agreement levels of more than 94%, emphasizing participant satisfaction through the practicality and applicability of the training practices. These results indicated that the materials, information, and methods implemented in socializing all the members of the community service program were well received and perceived as highly beneficial.

The disagreement and neutrality levels were stated in the low category throughout the questionnaire. Most questions were responded to in the category of *strongly disagree*, where the number score was (1), and the

response of disagree with the score was (2); the categories were below level, with several percentages of 2%, which showed minimal dissatisfaction. Fr neutral responses were also generally under 3%, indicating that most participants had a clear and confident perception through the training process. For instance, in question number 6, only about 0.5% of participants *disagree*d, and 1.5% of participants were *neutral*, while 98% of participants had positive responses. This minimal variation in low-score categories suggested that the socialization activity was highly aligned with participants' expectations and needs, with little ambiguity regarding its usefulness.

The collected data also indicated strong indicators of the development of confidence and readiness to use audio-based multimedia in the learning process of English language material. Questions 11 to 18, which are related to empowerment and personal capacity, consistently scored in the high category. In other words, most students agreed and strongly agreed on the options. Besides, 96% of respondents in Question 15 indicated that students tend to feel confident in applying audio-based learning material to their learning process. This meant that the workshop activity significantly delivered students' knowledge and experiences during the practice. Overall, there was positive feedback that strongly supported the conclusion that the community service activity had a significant impact on participants' willingness to adopt multimedia innovations in the classroom.
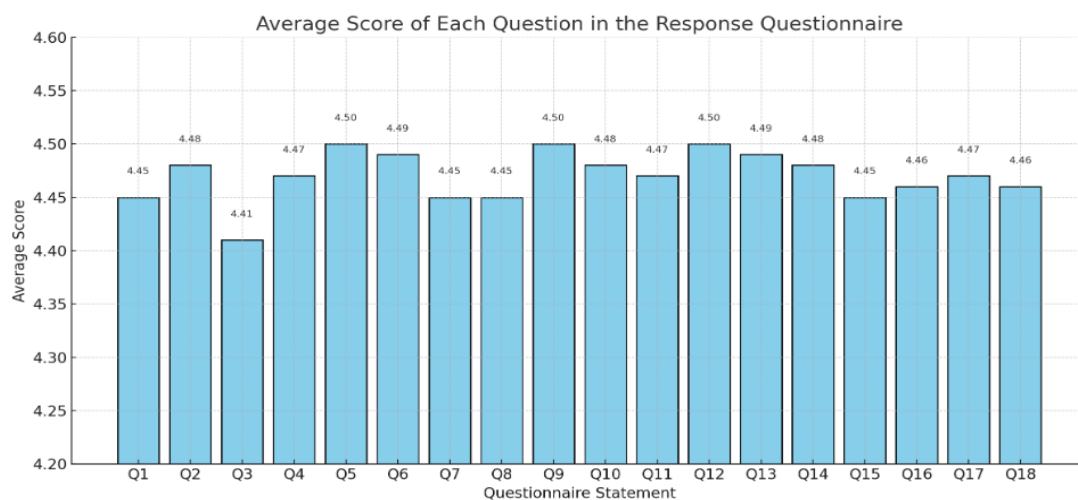


**Figure 2.** The average score of each question response in the questionnaire

The bar chart illustrates the average score for about 18 questions through the students' responses to the questionnaire, which was measured using a Likert scale. The overall trend indicated high levels of satisfaction among participants, as all average scores fell between 4.41 and 4.50. It is also evident that most respondents selected the 'agree' or 'strongly agree' option for each of the items. Questions 5, 9, and 12 revealed that the highest average score was 4.50, indicating strong participant approval in areas likely related to the relevance, delivery, and practical utility of the socialization activity. These results suggest that the community service activity effectively matches students' needs and challenges while they are learning English.

While the average scores also mentioned the high category score across the board, a few items, such as questionnaire number 3 (4.41) and number 8 (4.45), indicated scores slightly lower than the rest. Finally, this finding revealed some weaknesses and areas that need further improvement. However, the narrow score range indicated high consistency among participants' positive insights.

## 2. Discussion

The results of the community service activity showed that integrating audio-based multimedia into English learning improved students' engagement, comprehension, and motivation. Most students responded positively to the socialization of materials and delivery methods, as indicated by the Likert scale questionnaire. Podcasts, audio recordings, and pronunciation tools were identified as relevant and easy to use, specifically for auditory learners. This also supports the prior research result that audio media may help facilitate individualized and inclusive learning.

As a result, the workshop also addressed a significant gap in students' prior experience with educational technology. With the general availability of digital tools, most students had limited exposure to the practice

of audio-based learning, highlighting the need for structured, practical training. Every single step activities and accessible tools used during the practice empowered students to implement what they had learned, aligning with the digital literacy purposes in education of vocational high schools.

Although the activity also identified ongoing challenges, such as limited access to quality devices like audio and internet connectivity, these issues need to be highlighted in future implementations. Overall, the program demonstrated the effectiveness of students' readiness and skills improvement in using multimedia tools, and highlighted the value of practice and context-based training through digital literacy gaps.

### 2.1 Implications

The findings of this community service activity have several important implications for vocational education and digital literacy. The positive reception and high satisfaction levels among students at SMK Muhammadiyah 2 Palembang regarding the audio-based multimedia training suggest that such interventions are highly relevant and beneficial in contemporary educational settings. The demonstrated improvement in students' understanding, confidence, and motivation to use audio-based tools implies that practical, hands-on workshops can effectively bridge the digital literacy gap, particularly in environments where students have limited prior exposure to educational technology. Furthermore, the success of integrating audio media, such as podcasts and audio recordings, supports the idea that these tools can facilitate individualized and inclusive learning experiences, catering to diverse learning styles, especially for auditory learners. This highlights the potential for audio-based multimedia to enhance learning engagement and outcomes, aligning with 21st-century education goals.

### 2.2. Research Contribution

This study contributes to the existing body of knowledge by providing empirical evidence of the effectiveness of audio-based multimedia training in improving digital literacy and English language learning among vocational high school students in a specific Indonesian context. While previous research has highlighted the benefits of multimedia in education, this study specifically addresses the challenges faced by vocational students in utilizing audio-based tools and demonstrates a successful intervention model. The detailed methodology, including the use of a Likert-scale questionnaire and descriptive quantitative analysis, offers a replicable framework for assessing the impact of similar training programs. The high levels of participant satisfaction and confidence reported provide strong support for the practical applicability of audio-based multimedia as a valuable pedagogical tool. Additionally, by identifying ongoing challenges such as access to quality devices and internet connectivity, the study also contributes to understanding areas requiring further attention in future implementations of digital literacy initiatives in vocational schools.

### 2.3. Limitations

Despite the positive outcomes, this study has several limitations. The training activity was a one-day workshop, which might limit the long-term retention of skills and sustained adoption of audio-based multimedia by the students. While the study collected data through a Likert-scale questionnaire to assess immediate satisfaction and perceived benefits, it did not include a direct measure of English language proficiency improvement or a follow-up assessment to track the continued use of audio tools in students' learning practices. The sample size was relatively small, involving 21 second-grade students from a single vocational high school (SMK Muhammadiyah 2 Palembang), which may limit the generalizability of the findings to other vocational schools or educational contexts. Furthermore, the reliance on self-reported data through questionnaires, although widely used, might be subject to response bias. Finally, the study acknowledged challenges such as limited access to quality devices and internet connectivity, but did not delve into specific strategies or solutions to overcome these infrastructural limitations during the activity itself.

### 2.4. Suggestions

Based on the findings and limitations of this study, several suggestions can be made for future research and practice. Firstly, future training programs should consider longer durations or a series of workshops to ensure sustained skill development and integration of audio-based multimedia into students' daily learning routines. Secondly, incorporating pre- and post-assessments that directly measure English language proficiency, in addition to self-reported perceptions, would provide a more comprehensive understanding of the training's impact on learning outcomes. Thirdly, expanding the scope of similar activities to include a larger and more diverse sample of vocational schools could enhance the generalizability of the findings. Researchers could also explore the effectiveness of various audio-based multimedia tools and compare their

impact on different aspects of language learning. Lastly, future interventions should proactively address infrastructural challenges, such as device availability and internet access, by exploring low-cost or offline audio solutions or by collaborating with school administrations to improve technological resources. Incorporating teacher training on the integration of audio-based multimedia is also crucial to ensure sustainable pedagogical innovation within the school community.

## D. Conclusion

According to the questionnaire responses, the researchers found that the community service activity was well-run. The third material or topic related to audio-based multimedia was presented; the socialization and implementation of this training had a significant impact on the students of Vocational High School Number 2 Muhammadiyah Palembang. There were consistently high scores for all 18 indicators, reflecting strong agreement and satisfaction with the socialization content and practice delivery. The students mentioned that the material given was relevant to their English language problems. Therefore, students claimed that the material and audio tools were applicable and needed practice. Then, the community service members agreed that there were improvements in motivation, confidence, and willingness to adopt audio-based media to enhance the English language learning process. Therefore, integrating audio-based multimedia into the learning process represented a valuable and practical approach to increasing learning outcomes, especially in the vocational high school of Muhammadiyah number 2 Palembang. This suggests that future training programs in similar educational settings should also consider incorporating audio-based multimedia as the primary strategy to support digital literacy and enhance language learning effectively. These results are identical to those of some previous community service activities, which successfully improved students' digital literacy and learning engagement through the training of multimedia-based skills in vocational education contexts.

## E. Acknowledgment

## F. Author Contribution Statement

AG conceived the project, coordinated the community service activity, and led the writing of the manuscript. BA was responsible for designing and implementing the training workshops and collecting the data. AS contributed to the analysis and interpretation of the data and assisted in the critical revision of the manuscript. All authors read and approved the final manuscript.

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