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The Development of Listening Teaching Materials For Indonesian Language For Foreign Speakers (BIPA) Based On *Millealab Virtual Reality* At The Indonesian Embassy In Paris

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Abstract: The current Indonesian Language Program for Foreign Speakers (BIPA) plays a crucial role in advancing Indonesia by increasing the interest of other countries in learning Indonesian culture and language. The scarcity of available listening skill teaching materials for educational purposes poses a challenge to the teaching and learning process of Indonesian culture and language. This research aims to develop teaching materials for listening to Indonesian for Foreign Speakers (BIPA) based on the Millealab Virtual Reality application. The research method employed is Research and Development (R&D) using the Borg and Gall model. Of the ten steps, this study adopts only five: (1) potential and problems, (2) data collection, (3) product design, (4) design validation, and (5) design revision. The research instruments include observation activities, questionnaires, interview guides, and expert validation sheets to obtain the desired data. The teaching materials developed in this study are prototypes of BIPA listening teaching materials based on Millealab Virtual Reality. The research output, a prototype of Millealab Virtual Reality-based BIPA listening teaching materials, has been validated by experts, indicating that the developed Millealab Virtual Reality-based listening teaching materials are feasible for use.

Keyword: Listening Teaching Materials, Indonesian Language, Foreign Speakers, Bipa, Millealab, Virtual Reality.

INTRODUCTION

The BIPA program has gained popularity and interest on the international stage, one notable example being in France. According to the kemdikbud.go.id website (2023), interest in the Indonesian Language for Foreign Speakers (BIPA) in France has increased since 2020, both during and after the Covid-19 pandemic. Since transitioning to online and/or blended learning methods between 2019 and 2022, the number of BIPA participants at the Indonesian

Embassy in Paris has surged dramatically, exceeding 500 individuals. The Covid-19 pandemic has introduced challenges for both instructors and learners, such as limitations in technology usage, devices, and supportive environmental conditions. Moreover, as previously mentioned, the availability of teaching materials at the Indonesian Embassy in Paris that are not specifically applicable to one language skill creates another disparity—namely, the lack of supporting media used, especially for listening skills. Therefore, innovation through teaching materials is required to enhance listening skills and foster discussion between instructors and learners in the classroom. Additionally, these teaching materials should be accessible outside the classroom to deepen understanding of the subject matter.

Based on the author's interview with the Educational and Cultural Attaché of the Indonesian Embassy in Paris, Dr. Luh Anik Mayani, it was stated that the BIPA program at the Indonesian Embassy in Paris is conducted in two sessions each year, in April and September. In the second session, the BIPA program at the Indonesian Embassy in Paris has four classes, divided into two beginner classes, one business class, and one advanced class. Currently, the learning activities are still conducted online via Zoom, with the availability of teaching materials prepared based on discussions among the BIPA program organizers, instructors, and observations of learners' needs. The available teaching materials cover all language skills, comprising a combination of the four language skills: listening, reading, speaking, and writing.

Based on observations conducted in the classroom on November 14, 2023, there is a lack of digital teaching materials focused on listening skills used in the lessons, and the content in the teaching materials is not sufficiently practical for developing listening skills. Additionally, the material has not been fully delivered due to time constraints. The media used still relies on audio and video obtained by each instructor from the internet. Due to the absence of a specific schedule or time allocated for learning each language skill, the evaluation of listening skills is not evident during the learning activities.

Learners also face several challenges during the learning activities, such as confusion in responding to questions and material from the instructors, and difficulty in pronouncing words given by the instructors in Indonesian. As noted by three instructors during interviews, although the materials provided to learners are in accordance with the established curriculum, each instructor supplements the material and themes to align with the previously taught content. However, due to time limitations, the material has not been fully delivered effectively.

The importance of teaching materials that align with the learning conditions lies in their ability to help students comprehend the material effectively. Appropriate teaching materials enable educators to design relevant content and utilize supportive technologies or media to their fullest potential. This approach fosters a learning environment that facilitates interaction between educators and students, ensuring effective learning even under varied circumstances, such as online learning due to the COVID-19 pandemic. For instance, the Indonesian as a Foreign Language (BIPA) program at INALCO, Paris, transitioned to online learning in April 2020, employing platforms such as Moodle, Skype, WhatsApp, and Zoom (Dirga, 2021). This transition posed challenges for both educators and students, including limited access to technology, devices, and a conducive learning environment.

Based on the needs identified above, the author proposes an innovation to develop a teaching material model for the Indonesian Language for Foreign Speakers (BIPA) program, specifically focusing on listening skills, using Millealab Virtual Reality (VR) for BIPA 1. According to the Virtual Reality Brief (available at [Millealab] (https://www.millealab.com/id)), more than 93% of educators believe that VR-based educational content will aid learners and enhance their learning experience. Utilizing technology in VR-based learning media can

make a significant contribution to the learning process. To achieve quality learning, innovation in learning media is essential (Esteves et al., 2019).

Currently, the beginner level BIPA program at the Indonesian Embassy in Paris is at level A1 according to the Common European Framework of Reference for Languages (CEFR), or equivalent to BIPA 1 according to the Indonesian Language Proficiency Test (UKBI) level, developed in accordance with the Graduate Competency Standards (*Standar Kompetensi Lulusan*) outlined in *Permendikbud* No. 27 of 2017. At the BIPA 1 level, learners are expected to understand and use expressions related to self-introduction and fulfilling everyday and routine needs in a simple manner to communicate with highly cooperative conversational partners. This level provides a good opportunity to attract foreigners to learn more about the Indonesian language and culture.

By incorporating innovative and engaging teaching materials, such as virtual reality-based materials, into the learning activities at this basic level, it is possible to enhance the appeal and effectiveness of the program. The Millealab Virtual Reality application can facilitate this by not only teaching the language but also showcasing Indonesian culture virtually. This approach can make the learning experience more immersive and interesting for the learners. Intercultural education is a process that broadens students' cultural insights through the introduction of new information about other cultures and foreign languages. Simultaneously, this process enhances students' awareness of the unique features of their own culture and language (Madya, 2013: 194).

Based on the aforementioned issues, possessing strong listening skills at the BIPA 1 level is crucial for every learner. Good listening skills are essential as they aid learners in developing other language skills, particularly speaking. As Susanti (in Sukma and Saifudin, 2021) explains, the objectives of listening skills include obtaining information, analyzing ideas, evaluating information, and enhancing speaking skills. Therefore, appropriate teaching materials for BIPA 1 listening skills are vital to creating an effective learning environment for acquiring other language skills. Furthermore, fostering enjoyable listening skill learning can enhance interaction between learners and instructors, leading to more positive outcomes in the learning process.

The Millealab Virtual Reality-based teaching materials are expected to help enhance listening skills. The application of virtual reality (VR) technology can improve concept comprehension, enabling learners to understand better with the aid of VR, and teachers also find VR media supportive in the learning process (Zulherman et al., 2021). In the learning context, VR applications can present situations or scenarios that require learners to listen to and understand the provided information. Learners can use VR devices to experience virtual environments, listen to instructions, conversations, or simulated dialogues. They can then respond with multiple-choice answers or assess the truthfulness of statements based on the information they have heard. Furthermore, the assessment features within the VR application can be monitored by teachers to track the learning progress of BIPA students. This interactive and immersive approach not only makes learning more engaging but also provides real-time feedback and evaluation, enhancing both the teaching and learning experience.

Therefore, in the current digital era, it is essential to provide teaching materials that are easily accessible to learners both inside and outside the classroom. These materials should not only present the content but also incorporate cultural elements, as language learning is inherently linked to culture. The availability of such teaching materials can also support teachers who may be less experienced or who need to build their confidence in teaching (Richards, 2001a). New technologies are constantly emerging, and the pace of technological progress has accelerated in the digital era. VR has become a favorite among researchers and educators for its ability to provide immersive, hands-on experiences (Lan, 2020). Traditional classroom teaching often struggles to create an immediate learning environment, conduct

quick assessments, and maintain high engagement levels. In contrast, digital learning tools and technologies effectively address these shortcomings, offering efficiencies that traditional methods cannot match. With the widespread use of smartphones and other wireless devices, it makes sense for schools and educational institutions to integrate technology into the classroom. The adaptability and seamless nature of today's technology enhance the learning experience for the next generation (Haleem et al., 2022).

Based on the phenomenon described above, this research is motivated by the need to develop listening teaching materials for BIPA level 1 learners that are currently non-existent and unused at the Indonesian Embassy in Paris (KBRI Paris), especially teaching materials utilizing virtual reality (VR) for listening skills, which are currently scarce. This is crucial for BIPA learning because level 1 learners still lack proficiency in Indonesian language. Therefore, it is important to analyze the issues and needs in developing VR-based listening teaching materials for BIPA 1, considering the current development and skills of BIPA learners at KBRI Paris. This analysis will aim to address the gaps in existing teaching methods and provide an innovative approach that leverages VR technology to enhance listening skills effectively.

METHOD

The research method utilized is Research and Development (R&D) following the Borg and Gall model (in Sugiyono 2009:409). From the typical ten steps, this study encompasses five steps: (1) potential and problems, (2) data collection, (3) product design, (4) design validation, and (5) design revision. This study involved 3 teachers and 19 BIPA (Indonesian for Foreign Speakers) learners, including beginners as well as intermediate and advanced learners who had previously studied Indonesian at the beginner level at the Indonesian Embassy in Paris. The data collected comprises both qualitative and quantitative data. Qualitative data includes observations, teacher interviews, and student questionnaires. Quantitative data, on the other hand, was obtained from validation by subject matter experts and media experts.

In the development of Indonesian listening skills teaching materials for Foreign Speakers (BIPA) based on Millealab Virtual Reality at the Indonesian Embassy in Paris (KBRI Paris), the research steps were simplified to only include the design revision or refinement of the design due to time constraints, as the BIPA learning process at KBRI Paris was scheduled to conclude in early December 2023. The following is a detailed explanation of the stages carried out in this research.

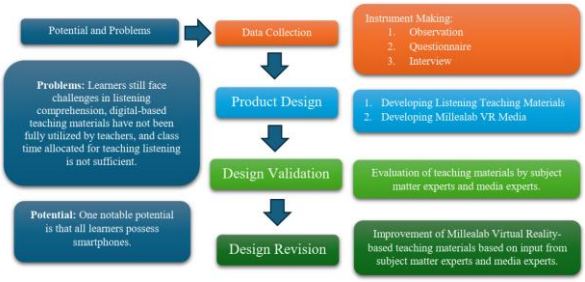


Figure 1. Research and Development Flow

The subjects and population of this study are beginner-level BIPA learners and teachers at the Indonesian Embassy in Paris, with a sample size of 19 learners and 3 teachers. Additionally, the study involves BIPA content experts and media experts who provide assessments and feedback on the BIPA listening teaching material prototype based on Millealab Virtual Reality. Data collection was conducted using non-test methods such as questionnaires, interviews, and observations, which were analyzed qualitatively. The

questionnaire data (from students, teachers, and experts) were created using Google Forms and analyzed descriptively. The validation test questionnaire used for product validation consisted of two parts: a checklist column and a comments section for feedback, criticism, and suggestions from validators. Observation data served as supporting data in the research. All collected data were meticulously recorded and examined in detail. Observations were fully documented and then reduced to highlight key data supporting the research. The interview technique involved open-ended interviews with teachers to gather information about beginner-level BIPA learning, particularly in listening instruction. The interview data were qualitative, and the information was organized descriptively. After conducting the interviews, the researchers compiled the data into descriptive paragraphs to ensure a coherent and orderly presentation.

The qualitative data obtained from the percentage of responses in the questionnaires from teachers and BIPA students is used for needs analysis, whereas the quantitative data obtained from subject matter experts and media experts is used for product feasibility analysis. The quantitative results obtained from experts are then converted into quantitative data using the Likert scale. The Likert scale analysis is employed to measure the attitudes, opinions, or perceptions of individuals or groups regarding a specific event or social phenomenon (Widagdo et al., 2020).

Tabel 1. Assessment on a Likert Scale

Score	Information
5	Very worthy
4	Worthy
3	Decent enough
2	Not worth it
1	Very inadequate

Calculation of scores on a Likert scale uses the following formula:

$$\bar{x} = \frac{\sum X}{N}$$

Information:

$\bar{x}$ = average score

$\sum X$ = total score

N = number of product trial subjects

After the calculation results from the above formula are completed and the final scores are obtained, the next step is to interpret the average value qualitatively. Below is the Score Conversion Guideline Table:

Table 2. Score Conversion Guideline

No	Score Interval	Category	Range
5	Very Appropriate	X > X + 1.80 Sbi	X > 4.20
4	Appropriate	X + 0.60 Sbi < X ≤ X + 0.60 Sbi	3.40 < X ≤ 4.20
3	Fairly Appropriate	X - 0.60 Sbi < X ≤ X + 0.60 Sbi	2.60 < X ≤ 3.40
2	Less Appropriate	X - 1.80 Sbi < X ≤ X - 0.60 Sbi	1.80 < X ≤ 2.60
1	Very Inappropriate	X ≤ X - 1.80 Sbi	X ≤ 1.80

Explanation:

X = actual score from the obtained scores

$\bar{X}$ = ideal average

= 1/2 (maximum score + minimum score)

= 1/2 (5 + 1) = 3

Sbi = Ideal Standard Deviation

= 1/6 (maximum score - minimum score)

= 1/6 (5 - 1) = 0.67

Table 3. Summary of Data Collection and Analysis

Research Stage	Data Collection Method	Type of Data	Data Source	Data Analysis
Needs Analysis	Observation	Field notes	Learners and instructors	Qualitative
	Interviews and Questionnaires	Teaching material needs	Instructors and learners	Qualitative and Quantitative
Development	Questionnaires	Teaching material feasibility	Expert team	Quantitative and Qualitative

RESULTS AND DISCUSSION

Analysis of Needs Questionnaire

The questionnaire was distributed to BIPA learners currently undergoing or having completed basic level education at KBRI Paris. This needs analysis questionnaire encompasses several aspects adapted from the Nation and Macalister model (2010), which includes six main components: learning objectives, themes, content, learning activities, teaching media, and evaluation. From these six components, thirteen questions were developed.

In the component of learning objectives, particularly in listening skills, the first question asks about the learners' goals in studying Indonesian. Twelve learners mentioned that they study Indonesian Language for Foreign Speakers (BIPA) to socialize with family and friends who are native speakers of Indonesian. Three learners (63.2%) stated that they study BIPA for educational purposes, while another three learners (15.8%) mentioned studying for work-related reasons. One learner (5.3%) mentioned studying Indonesian for business purposes with Indonesians.

In the component that asks about themes, learners were given the opportunity to choose two themes of their preference. The majority of learners chose themes related to daily activities (78.9%), selected by 15 learners, while the second most chosen theme among learners was food (63%).

In the component asking about learning materials, learners were asked if they prefer using Indonesian as the language of instruction for studying BIPA. In response, all learners chose Indonesian as the language of instruction (100%), totalling 19 learners. In the second component of learning materials, learners were asked if they need text assistance in Indonesian to facilitate listening comprehension. A total of 17 learners (89.5%) opted for text assistance in Indonesian, while 2 learners (10.5%) did not choose this option. In the third component of learning materials, learners were given the opportunity to select their preferred listening material type. The majority of learners chose dialogues, with 11 learners (57.9%) selecting this option. Additionally, 3 learners (15.8%) chose stories, another 3 learners (15.8%) chose news, and 2 learners (10.5%) chose monologues.

In the component asking about learning activities, learners were asked if the listening study hours provided by the instructor are sufficient to improve listening skills. A total of 9 learners (47.4%) indicated that the hours are not sufficient, while 10 learners (52.6%) stated they are sufficient. In the second component asking about learning activities, learners were asked if they prefer to first grasp the meaning of the message conveyed and then detail each word heard. Sixteen learners (84.2%) responded "Yes", while 3 learners (15.8%) responded "No".

In the component asking about learning media, learners were asked if they use Indonesian listening materials from the internet. A total of 11 learners (57.9%) responded

"Yes", while 8 learners (42.1%) responded "No". In the component asking about learning media, learners were asked if there are other media available in class besides Zoom and Microsoft PowerPoint for online BIPA learning. 10 learners (52.6%) responded "Yes", while 9 learners (47.4%) responded "No". In the component asking about learning media, learners were asked if they use additional devices such as smartphones to listen to and watch audio-video learning materials. A total of 15 learners (78.9%) responded "Yes", while 4 learners (21.1%) responded "No". In the component asking about learning media, learners were asked if they agree with using Virtual Reality applications on smartphones as a learning media. 11 learners (57.9%) responded "Yes", while 8 learners (42%) responded "No". In the component asking about learning media, learners were asked how long they can focus using Virtual Reality applications on smartphones as a learning media. 11 learners (57.9%) chose 15 minutes, 3 learners (15.8%) chose 15-20 minutes, another 3 learners (15.8%) chose 30-60 minutes, and 2 learners (10.5%) chose 20-25 minutes.

In the component that inquired about learning evaluation types preferred when using Virtual Reality applications on smartphones as a listening media, the preferences were as follows: 7 learners (36.8%) chose multiple-choice questions, 4 learners (21.1%) chose True/False questions, another 4 learners (21.1%) preferred gap-fill exercises, 3 learners (15.8%) opted for question-answer format, and 1 learner (5.3%) chose essay questions.

From the thirteen questions posed in the questionnaire to learners regarding their preferences, it can be synthesized that the primary goal of BIPA learners at KBRI Paris is predominantly for socializing purposes with the Indonesian community. The most sought-after theme and topic of study among learners are daily activities. In the teaching materials component, all learners agree to use Indonesian as the medium of instruction for learning BIPA and require texts in Indonesian to facilitate comprehension. The preferred text format is predominantly dialogues. In terms of learning activities, learners generally prefer to start by listening to a dialogue or monologue to grasp the intended message first before parsing each word heard. In the teaching media component, learners utilize Indonesian listening materials sourced from the internet and agree to use Millealab virtual reality as a learning medium, with sessions lasting 15 minutes. Regarding evaluation methods, the majority of learners prefer multiple-choice assessments.

The learner data obtained includes participants from beginner, intermediate, and advanced levels, as well as business classes, with an average age of 39 years. Their occupations vary widely and include engineers, IT engineers, students, employees, retired IT engineers, consultants, managers, tour guides, technical assistants (civil servants), communication directors, professors, accountants, company supervisors, doctors, and unemployed individuals.

Product Design

The first stage involves planning teaching materials, starting with the creation of a syllabus that aligns with the curriculum and learning objectives, supported by theories and expert opinions cited in previous chapters. This syllabus is then broken down into units containing listening materials that incorporate competency elements and graduation indicators as specified in the syllabus. During the planning stage of teaching materials, the goal-setting process for developing these materials is established. Based on the analysis of needs and referencing the applicable curriculum, the objective of creating these teaching materials is determined: to enable learners to understand and use expressions in the context of self-introduction, and to provide basic everyday needs for communication with highly cooperative interlocutors related to daily activities. Therefore, the chosen theme integrates language proficiency, linguistic aspects, and cultural aspects in accordance with the established learning objectives. This learning objective includes competency units,

competency elements, and graduation indicators tailored to the research needs, specifically focusing on listening skills at the BIPA 1 level. The scope of learning refers to the curriculum's aim of comprehending and using expressions in the context of self-introduction, and providing basic everyday needs for communication with highly cooperative interlocutors based on the Graduate Competency Standards (*Standar Kompetensi Lulusan*) for BIPA 1 as outlined in *Permendikbud* Number 27 Year 2017 *"Ruang lingkup pembelajaran sendiri mengacu kepada kurikulum adalah dapat memahami dan menggunakan ungkapan-ungkapan dalam konteks perkenalan diri serta menyediakan kebutuhan konkret sehari-hari dengan cara sederhana untuk berkomunikasi dengan mitra tutur yang sangat kooperatif".* The primary focus in developing this learning material is on enhancing listening skills in BIPA 1. Therefore, only the listening competency units will be the main focus in the language skills aspect. The linguistic aspects will be adjusted according to the skills being taught. This material will be integrated into relevant themes, as suggested by Muliastuti (2017). Additionally, cultural aspects will also follow the themes that are the focus of the learning.

The competencies and graduation indicators were then integrated into a single unit according to the chosen theme. To facilitate understanding of these competencies and indicators, the researcher developed a syllabus based on the Graduate Competency Standards (*Standar Kompetensi Lulusan*) for BIPA 1 as outlined in *Permendikbud* Number 27 Year 2017, along with references from BIPA A1 curriculum at KBRI Paris and the book "Sahabatku Indonesia" in Jakarta. The selected theme, "Daily Activities," was chosen because it was the most frequently selected by learner respondents during the needs analysis phase. The syllabus above is structured in a listening instruction format, following the theoretical guidelines of the Ministry of Education and Culture regulations, specifically *SKL Permendikbud* Number 27 Year 2017 for BIPA 1 listening skills. It is based on a needs analysis of learner preferences, referencing the BIPA A1 curriculum at the Indonesian Embassy in Paris and the book "Sahabatku Indonesia" from Jakarta, to develop BIPA 1 listening teaching materials that facilitate product use.

In the initial phase after developing the teaching materials, the next step involves integrating the content into the Millealab Virtual Reality Creator application. The preliminary development of listening-based teaching materials using Millealab Virtual Reality begins with a depiction of the *Monumen Nasional* (Monas) environment. Users are positioned in an engaging initial location, marked by a user perspective labeled "Learning Objectives," which displays the logos of the Ministry of Education and Culture (Kemendikbud) and the Indonesian Embassy in Paris. Interactive features are provided through Info Popups that explain the upcoming lesson material along with accompanying audio. Learners then move to the next viewpoint, which involves pre-listening activities, such as videos explaining the grammar to be studied. In the subsequent viewpoint, learners encounter Info Popups and audio that elucidate the current unit in clear and concise sentence structures. Finally, in the last viewpoint, Info Popups and audio present a quiz. Below is an example of the Millealab Creator interface used by researchers to develop their teaching materials.

Figure 3 Learning Room Settings in Millealab Creator

Figure 4 Teaching Material layout settings in virtual space

Figure 5. Creation of Evaluation at the end of teaching materials (StandPoint)

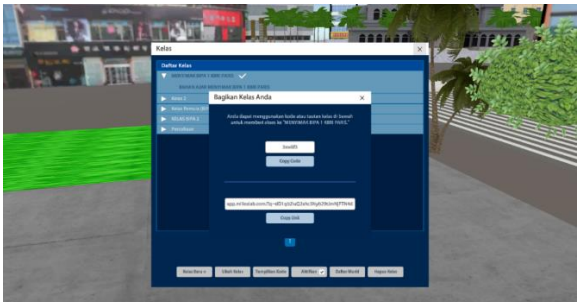


Figure 6. Class Access Code Generation

After creating teaching materials using Millealab Creator, the researcher integrates them into the classroom feature where a class code will appear. This code can be entered by learners into the Millealab Viewer app, downloadable on both Android and iOS smartphones. Upon downloading the app, the initial step for learners is to create an account. Once logged in, learners will encounter a user guide for using Millealab Virtual Reality-based listening teaching materials, starting with a sign-in menu that includes options like signing in with Google. Upon successful login, learners will see an explore menu displaying various classes created by educators across Indonesia, accessible to anyone. To join a specific class provided by an educator, learners need to navigate to the classroom menu and enter the class code shared by the educator. Upon successfully joining the learning class, learners will encounter "Learning Objectives" with logos from the Ministry of Education and Culture (*Kemendikbud*) and Indonesian Embassy (KBRI) in Paris. Next, learners progress to a standpoint explaining pre-listening activities, including vocabulary and the unit to be studied, presented in simple and concise sentence structures. Below is an example of the Millealab Viewer application interface used by learners as a guide for usage.

Figure 7. First page display of Millealab Viewer

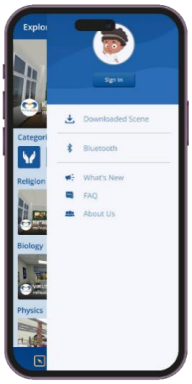


Figure 8. Display the Identity Contents/Sign In with Email page

Figure 9. The main page display (Explore) Millealab Viewer

Figure 10. Display of the join class menu page

Figure 11. The page displays successfully entered the class

Figure 12. The selected class page displays

Figure 13. Display the class page to be studied

Figure 14. Display the select mode menu page

Figure 15. Virtual reality room design

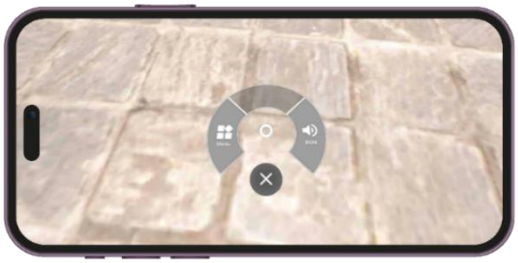


Figure 16. Instructions for exiting the virtual room and returning to the main menu

Utilizing VR for Enhancing Creative Listening in *Pencak Silat* Training, The Millealab VR application is a valuable tool for enhancing creative listening during daily Pencak Silat training sessions in a virtual Monas environment. This application aids users in effectively

connecting meanings from diverse listening experiences. Users can achieve a deeper and more comprehensive understanding by linking the information heard with their existing knowledge and experiences.

In the pre-listening stage, learners are introduced to the learning material and the Monas environment using VR technology. Subsequently, in the listening stage, learners listen to conversations or recordings about activities at Monas and understand the context of the dialogue. Finally, in the post-listening stage, learners engage in exercises and evaluations to assess their understanding of the material they have listened to.

Design Validation

The validation results from subject matter experts for the BIPA listening teaching materials based on Millealab Virtual Reality show an average score of 3.50. The subject matter expert in this study is a lecturer with a background in teaching Indonesian for Foreign Speakers (BIPA) to French-speaking learners. The validation of the subject matter expert uses six aspects adopted from Cunningsworth (1995). These aspects include the foundation of teaching material development, objectives and approaches, design and organization, linguistic and cultural content, topics and themes, and methodology. Each aspect encompasses several indicators, such as curriculum-based development references and needs-based development references. The objectives and approaches aspect has two indicators: general objectives and specific objectives. The design and organization aspect is divided into three indicators: the sequence of materials from easy to difficult, instructions for using the materials, and material support related to presentation and media. The linguistic and cultural content aspect includes linguistic and cultural components and the explanation of culture as linguistic knowledge and skills. The topics and themes aspect has indicators related to the material topics and learners' needs, while the methodology aspect focuses on the types of tasks given. This score falls within the range of $3.40 < X \leq 4.20$, indicating that the experts' assessment categorizes the listening materials as "appropriate" or "acceptable."

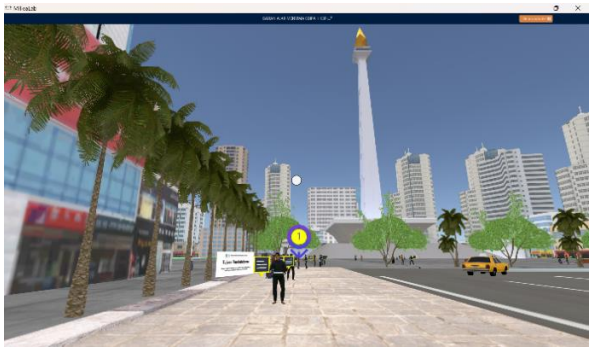
Similarly, the validation results from media experts for the BIPA listening teaching materials based on Millealab Virtual Reality show an average score of 4.14. The media expert in this study is an individual with experience in the field of digital media. The validation of the media expert utilizes three aspects adopted from Romi Satria Wahono (as cited in Firdiana, 2020). These three aspects are the alignment with Software Engineering Aspects, Teaching Design Aspects, and Visual Communication Aspects. The Software Engineering Aspects pertain to whether the application can be easily managed/maintained, the ease of media operation, and the clarity of usage instructions. The Teaching Design Aspects relate to the use of Indonesian language appropriate to the age and competence level of BIPA 1, the clarity of the material and evaluations within the media, and the suitability of the media usage duration. The final aspect is Visual Communication Aspects, which concerns the appropriateness of 3D asset selection, the appropriateness of image and video selection, clear audio, the balance of image and video proportions, the suitability of background sound selection, the appropriateness of standpoint placement in line with the material flow, and the attractiveness of the virtual environment. This score also falls within the range of $3.40 < X \leq 4.20$, indicating that the media experts' assessment categorizes the listening materials as "appropriate" or "acceptable."

These results indicate that both subject matter experts and media experts find the BIPA listening teaching materials developed using Millealab Virtual Reality to be suitable for their intended purpose. Based on the presentation above, the prototype of BIPA listening teaching materials based on Millealab Virtual Reality has been further perfected due to the feedback provided by the supervising instructor and subject matter as well as media experts. Both subject matter and media experts have deemed the resulting product suitable for use.

Design Revision

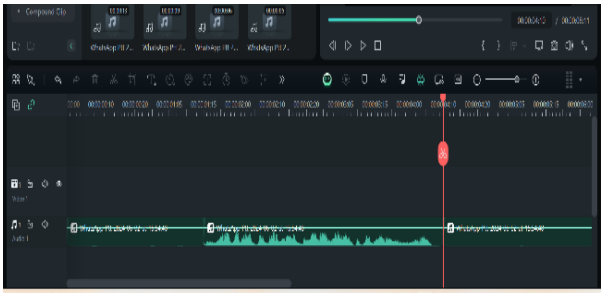
Based on feedback from subject matter experts, regarding the design and organization aspects related to teaching use of the materials, there were technical challenges encountered during media usage. Experts have evaluated that they prefer the "Play in Non-Gyro" mode over the "Play in Gyro" mode due to its greater comfort and ease of operation. Another drawback highlighted is that users/learners cannot exit the game until they have completed all stages. Therefore, a video guide on using the teaching materials based on Millealab Virtual Reality was created and placed at the beginning, either when learners/users enter the learning class or before they proceed to the first standpoint.

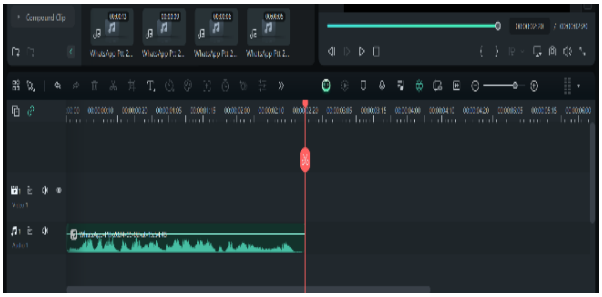
Before Revision **After Revision**



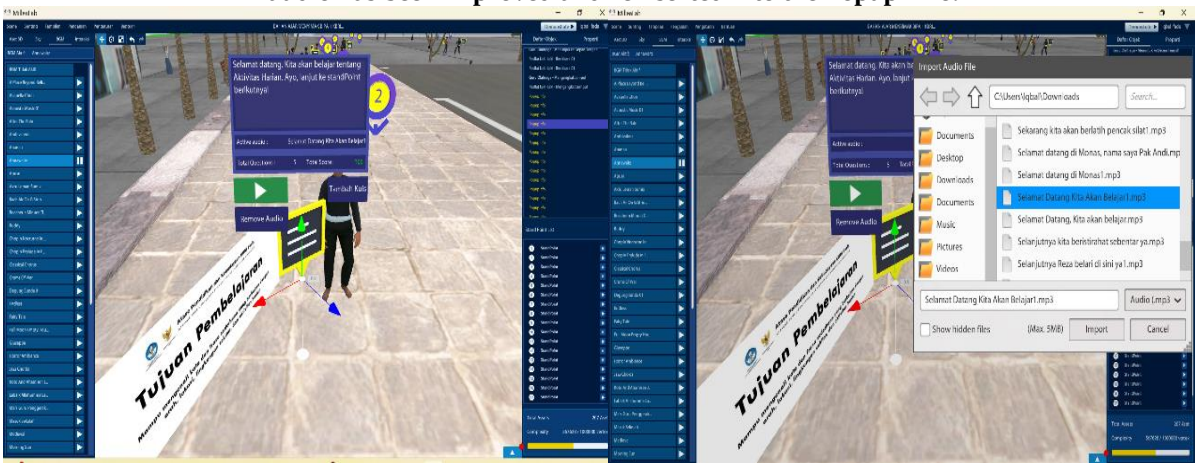
In terms of design and organization concerning supporting media materials, some of the audio in the Popup Info experienced slight delays. Consequently, the content resembled more of a reading activity rather than a listening activity. Therefore, the audio was re-edited using the audio-video editing application Wondershare Filmora 13.

Before Revision **After Revision**





All audio has been improved and reinserted into the Popup Info.



In terms of linguistic content, please pay attention to spelling and punctuation in the transcription of the dialogues; I still found some errors, such as "*Baik Pak Andi*" instead of "*Baik, Pak Andi*", "*Pak Andi, Bagaimana...*" instead of "*Pak Andi, bagaimana...*".

Before Revision
Standpoint 11 (Audio 18)

After Revision
Standpoint 11 (Audio 18)

Meanwhile, based on feedback from media experts, it is advised to ensure the appropriate placement of Popup Info and overlapping 3D assets, as this can obstruct users from viewing moving objects. For instance, Popup Info may obstruct an object when a 3D character intends to demonstrate a hitting technique to users, but the technique appears unclear.

Before Revision
StandPoint 9

After Revision
StandPoint 9

Some popup info boxes are positioned at angles that are less than optimal, making it difficult for users to accurately direct the pointer to these popup info boxes. For example, some popup info boxes for students and silat coaches are too tilted. Additionally, the line of sight or placement of the standpoint too close to 3D character assets causes learners/users difficulty in reading the sentences displayed on the popup info boxes.

Before Revision
StandPoint 6

After Revision
StandPoint 6

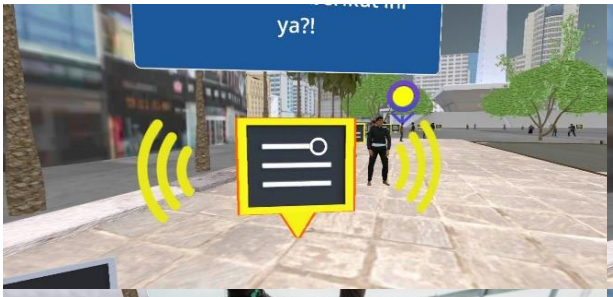
StandPoint 7

StandPoint 7

StandPoint 13

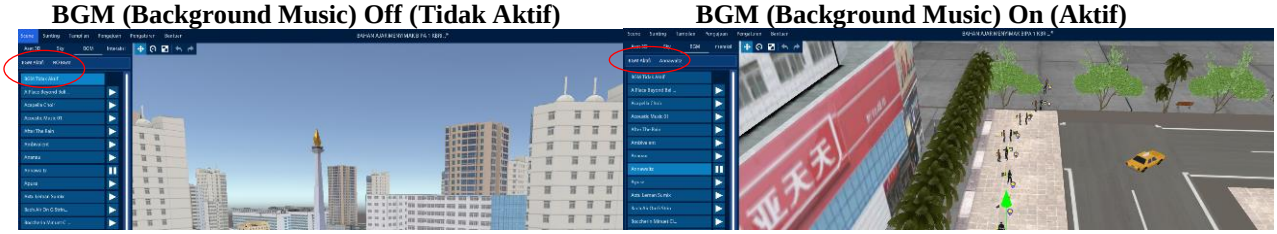
StandPoint 13


StandPoint 2 **StandPoint 2**



The researcher needs to adjust the audio used to support the environment and atmosphere, such as adding instrumental background music available in MilleaLab to enhance the atmosphere created within the virtual space.

Before Revision **After Revision**
BGM (Background Music) Off (Tidak Aktif) **BGM (Background Music) On (Aktif)**



CONCLUSION

The teaching material for BIPA listening at KBRI Paris based on Millealab Virtual Reality has introduced a new variation in the field of Indonesian language learning. Previously, there was no BIPA teaching material based on Millealab Virtual Reality focusing on listening instruction. Additionally, within the realm of Indonesian language learning, there has been no presentation of teaching materials with evaluations accessible in a single application format through the Millealab Viewer app. The development design of the BIPA listening teaching materials based on Millealab Virtual Reality was structured through several stages: syllabus development, product usage format creation, and lastly, flowchart and storyboard creation. Based on the prototype design, the implementation utilized the Millealab Creator application. Guidance from the supervising instructor and experts in Indonesian language learning influenced the development of these teaching materials. During this development phase, validation was conducted by both BIPA subject matter experts and teaching media experts. The subject matter experts affirmed that the BIPA listening teaching materials based on Millealab Virtual Reality are suitable for use with improvements.

Similarly, media experts rated the product with an average score of 4.14, falling within the range of $3.40 < X \leq 4.20$, indicating that their assessment categorizes the teaching materials as appropriate. The product has been refined based on feedback and suggestions from these experts. These results demonstrate that the BIPA listening teaching materials based on Millealab Virtual Reality are deemed suitable and can be utilized by BIPA learners at KBRI Paris.

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