

# Enhancing Students' Listening Skills: The Impact of the Innovative Ocean Application

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**Abstract.** This study investigates the effectiveness of the Ocean application in enhancing listening skills among maritime students, a crucial competency in the maritime industry where clear and accurate communication can significantly impact safety and efficiency. The primary purpose of this research is to evaluate how the integration of auditory and visual stimuli within the Ocean application can improve students' ability to comprehend and retain maritime communication protocols. A mixed-method approach was employed in this study to provide a comprehensive analysis of the application's impact. The quantitative aspect involved pre- and post-assessment tests administered to a sample group of maritime students, measuring their listening skills before and after using the Ocean application. The qualitative aspect included interviews and surveys to gather user feedback on their experiences with the application, focusing on its usability, engagement, and perceived learning outcomes. The results of the study demonstrated a marked improvement in the listening skills of students who utilized the Ocean application. Quantitative data showed a statistically significant increase in test scores, indicating enhanced comprehension and retention of the material. Additionally, qualitative feedback from students highlighted the application's interactive features, such as synchronized audio-visual content, as particularly beneficial for maintaining engagement and reinforcing learning. Students reported that the application made complex maritime communication scenarios easier to understand and practice. These findings suggest that the Ocean application is an effective tool for enhancing listening skills in a maritime education context. The study concludes by recommending the broader adoption of such technology-driven learning tools in maritime training programs, emphasizing their potential to improve essential communication skills and overall safety in the industry.

Keywords: Enhancing, Listening Skills, Ocean Application

## 1. INTRODUCTION

Maritime English is closely related to listening, as listening is one of the skills for inputting vocabulary. Teaching listening in Indonesia poses a unique challenge for English teachers, considering that English is a foreign language in the country and is only used in certain domains. In learning listening, students are sometimes faced with the fast speed of native speakers, and the lack of listening resources also becomes a particular issue that needs to be addressed. The unavailability of adequate listening media is one of the factors that hinder Indonesian students in learning listening (Utomo et al., 2019). This situation creates anxiety among students when dealing with native speakers. The difference between pronunciation and writing makes listening issues even more complex among students. Additionally, the current generation is already familiar with technology, so English teachers today are required to keep up with technological developments. There are numerous types of AI (artificial intelligence) and chatbots that can be explored for educational purposes (Pardo et al., 2021). For example, BERT, developed by Google AI, is designed to handle various language processing tasks (Devlin et al., 2018).

One application of technology in English language learning is packaging English lessons into technology-based games. Games have been proven to reduce students' anxiety in learning English and increase their motivation. Games have been shown to boost students' motivation to learn English and make them feel more confident (Elaish et al., 2019). Packaging English learning into technology-based games greatly assists teachers in teaching English in a fun way. In a game, students will feel entertained. Online simulation games can reduce foreign language anxiety (FLA) because online games can bridge English learning and the real world that students face (Yang et al., 2023). As a result, they can unconsciously apply the previously unfamiliar English language. Motivation plays a crucial role in language teaching because learning a language is one way to develop competence, making autonomous learning very important to foster in students.

Android-based applications are among the most frequently used applications in students' daily lives. Android-based applications are popular worldwide due to their large market share and the opportunities they offer to reach users across various devices. Android's open-source nature gives developers the flexibility to customize their applications, and the Google Play Store provides an accessible distribution platform. The wide range of Android-enabled devices, from low-cost phones to high-end devices, offers developers the opportunity to create applications that meet various specifications. Android Studio is a free and advanced IDE that simplifies application development and supports a large developer community, creating an ecosystem that fosters knowledge sharing. Meanwhile, continuous innovation and updates in the Android world give users access to the latest features and technologies, making this platform the first choice for developers and users alike.

Android games are an effective learning tool that enhances students' English language skills in many ways. First, many educational games on the Android platform are specifically designed to improve English vocabulary and speaking skills. Through these games, students can learn new vocabulary, sentence structures, and listen to conversations in a fun and engaging context. Additionally, some games offer grammar tasks that allow students to improve their skills in understanding and applying grammar rules. During the game process, students can unconsciously improve their reading and writing skills by interacting with texts included in the games. Games with narration or instructions in English can also enhance students' comprehension of the language. Furthermore, games can develop students' critical thinking skills in English, as they often require problem-solving and creative thinking. By designing

games that are engaging and consistent with the curriculum, educators can integrate English learning into activities that students enjoy, creating a fun and effective learning experience. Through Android games, students can develop their English language skills more intuitively and comprehensively, creating a learning environment that supports the overall growth of their English proficiency. It is important to package auditory learning in the form of games, as this approach not only creates an engaging learning experience but also encourages active student participation. These games provide real-life communication situations, a variety of accents, and speaking speeds, allowing students to become familiar with English in various everyday situations. Games are interactive and often require collaboration between players or characters in English, encouraging students to actively listen and respond, thus improving their listening skills in an enjoyable way. The game approach not only strengthens listening skills but also enhances students' learning motivation, helping them overcome barriers to understanding different accents, and strengthens their overall communication skills. Therefore, incorporating listening learning into games not only increases the effectiveness of learning but also creates an interactive and enjoyable learning environment for students.

Several studies on mobile learning development have proven to improve students' English language skills. Asma Abdul Aziz's research on "Growing Trends of Using Mobile in English Language Learning" surveyed users' responses to English learning applications. The results showed that learning applications can facilitate users' tasks and improve their listening and speaking abilities. Additionally, application users feel more independent in learning and act as self-evaluators (Aziz et al., 2018). Bor-Tyng Wang's research on "Designing Mobile Apps for English Vocabulary Learning" developed a vocabulary learning application by providing word descriptions in both Chinese and English. This application received positive responses and was able to increase students' motivation (Wang, 2017).

This research is motivated by the lack of interactive and engaging maritime English teaching media in the Faculty of Vocational Maritime Studies. This has led to many students in the maritime vocational programs struggling with learning maritime English, particularly in listening. Teaching listening is a challenge for every educator in Indonesia because English is a foreign language in the country. Listening cannot be fully learned within a short period in the classroom, necessitating intensive practice outside of class. Smartphones are an integral part of students' lives today, which is why the researcher is continuing the development of the OCEAN application as a medium for teaching maritime English listening to students in vocational maritime programs.

Listening is one of the essential competencies in learning English and is also a significant issue for Indonesian students. English teaching is closely linked with listening because it is a skill required as an input skill to expand vocabulary and sentence structures. The importance of listening cannot be separated from the various challenges faced by educators in Indonesia. This is because English taught in Indonesia is a foreign language, and many students still find English unfamiliar. As a foreign language, English has a reading style that differs significantly from its written form and is further complicated by accents that are very different from the Indonesian accent. This poses a particular challenge for English teachers in Indonesia, especially in delivering listening competencies. Most students in Indonesia do not have adequate listening skills, especially when the speakers are native speakers. The problems they face in listening to English include the speed of speech, limited vocabulary, concentration levels, and different language habits (Amir et al., 2019).

Listening is a significant challenge for some students at university, especially those in the Vocational Maritime programs. On the other hand, Vocational Maritime students highly need this skill to support their future careers. The majority of Vocational Maritime students cannot understand the content of the audio they hear during listening sessions for several

reasons, including the unclear pronunciation of native speakers, too fast speech speed, and lack of vocabulary knowledge. Based on the researcher's observations in the English classes of Vocational Maritime students, most students are always using their smartphones for translation, playing game and entertainment.

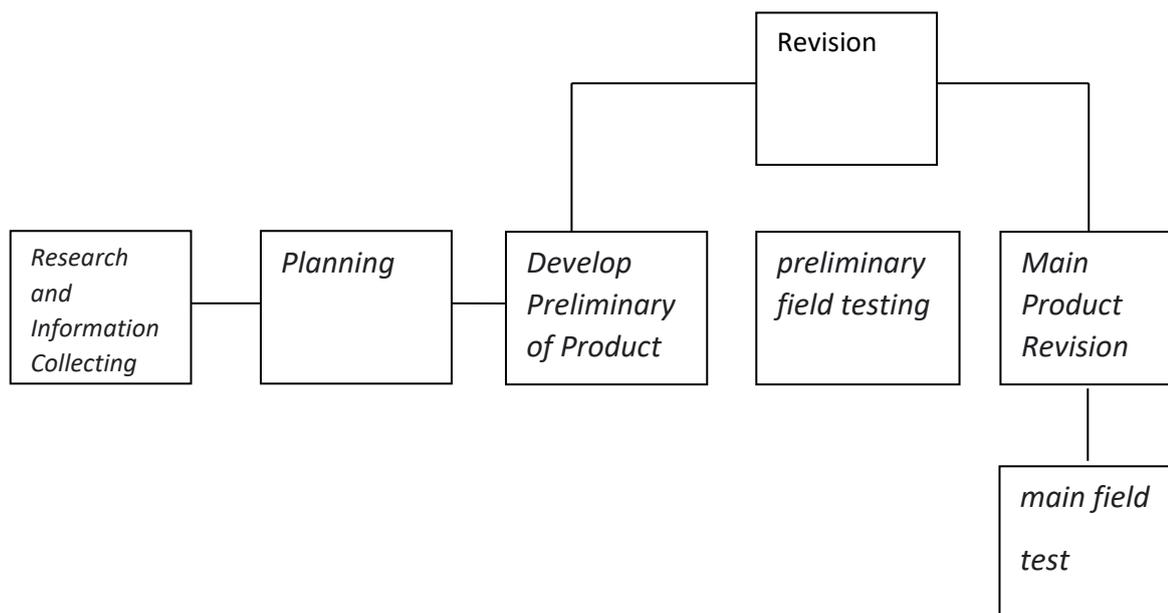
Technology is now deeply integrated into students' lives, so teaching methods must adapt to the evolving characteristics of students. The use of technology in language learning has been shown to significantly improve students' listening skills (Mulyadi et al., 2021). Students in this modern era are very familiar with technological developments, so using technology for teaching and learning purposes will be very effective. The use of mobile learning, implemented on students' smartphones, can also reduce their anxiety in learning listening and improve their skills (Rahimi, 2015). The use of technology has been proven effective in enhancing students' English proficiency both inside and outside the classroom (Ahmadi, 2018).

In this research, the researcher will integrate technology and listening learning to enhance the listening competence of students in the Faculty of Vocational Maritime Studies, who urgently need a medium to assist them in learning listening, especially outside the classroom. This research aligns with the strategic plan and vision of Hang Tuah University, which places a strong emphasis on English proficiency in its pursuit of becoming a world-class university with a focus on maritime studies. The study aims to improve the English language skills of students, particularly their maritime English. In this research, the researcher will further develop the OCEAN application, which was previously designed to enhance English vocabulary. This development includes an enhancement of the listening component, utilizing images and audio that are tailored to maritime English.

Previously, OCEAN was developed to improve the students' vocabulary and has been tested to know the effectiveness of the application. This application needed to be developed in other section that is listening skill. OCEAN was designed to ease students in practicing English outside of the class and reduce their anxiety of English.

## **2. METHOD**

This research is a developmental study using the research and development (R&D) design. According to Gall (2003), educational research and development is a procedure for developing and validating a product into a new one, which is then tested, evaluated, and revised. In this study, the author will adopt the research and development concept from Dick and Carey (2009).



**Figure 1.** Modified Research and Development Concept (Adopted from Dick and Carey. *The Systematic Design of Instruction* (7th Ed.), 2009).

The final version of the application will be implemented with students to gather their responses to the use of the OCEAN application, specifically the listening section, through a qualitative descriptive approach. The subjects of this research are 30 students from the Marine Engineering program in the maritime diploma. In the first stage, the researcher will conduct research and information gathering using a questionnaire aimed at: finding out the students' responses to the teaching and learning process of English listening in the marine engineering class, the difficulties students face in the process of English listening learning, students' needs regarding teaching methods and media used by the lecturer, and the type of media preferred by students in the listening learning process. The second stage involves planning the OCEAN listening media (Appendix 1). The third stage is the development of the media by the developer and research team members. The fourth stage involves conducting field testing with 5 respondents to identify the strengths and weaknesses of the product. The second instrument is a questionnaire for preliminary field testing, which will be given to students during the product evaluation phase, covering aspects such as the clarity of the material, ease of understanding the material through the product, student interest in the product, and difficulties students encounter when using the product. In the fifth stage, the researcher will revise the product according to the results of the field testing. The sixth stage involves conducting the main field testing with 30 respondents. In this stage, a questionnaire will be given to students as a product evaluation tool. The questionnaire is given to students to determine their responses to the developed product.

To analyze the questionnaire data, the author uses the percentage formula below:

$$P = \frac{f}{n} \times 100\%$$

**Explanation:**

P	=	percentage
F	=	frequency
N	=	population
100%	=	default number

The data will then be analyzed descriptively using the obtained percentages. After the entire development process is completed, the researcher will conduct a product effectiveness test through an experiment. The experiment in this research is intended to observe the effects of a specific treatment. The research design used is the Matching Pretest-Post-test Comparison Group Design with a single treatment. In the Matching Pretest and Post-test Control Group Design, two classes are directly selected and then given a pre-test to determine the initial conditions and to see if there are any differences between the experimental and control classes (Sugiyono, 2009: 113). The experimental class is given the treatment using the OCEAN application for the listening section, while the control class continues to use the lecture method. After the treatment, both classes are given a post-test. The hypothesis test is conducted to determine whether there is a significant difference in the listening competence of the Marine Engineering students selected as the Experimental and Control classes. This hypothesis test uses the t-test (independent t-test) to examine the difference in the mean between the two groups.

### 3. RESULT

#### 3.1 Need analysis

The first step of this development was doing need analysis and this step was a crucial step before developing the media. Need analysis, sometimes referred to as requirements assessment, is a methodical procedure used to determine and assess needs or gaps between intended results and existing circumstances in a specific setting. In order to make sure that resources, strategies, and actions are properly targeted to address particular needs, this approach is crucial in a number of industries, including education, business, healthcare, and social services. The subject of this research was the maritime students of X private university. The need analysis was gathered from questionnaire to know the students' need of English listening skill.

The needs analysis was conducted to understand the specific requirements of students in the Maritime Vocational Faculty regarding an English language learning application, focusing particularly on listening skills. A total of 30 students participated in the survey, which covered various aspects of their expectations and needs for a suitable learning medium.

##### 3.1.1 Flexibility in Learning Schedule

The survey revealed that 77% of students considered having flexible access to English learning media as "very important," while 20% deemed it "important." This indicates a strong demand for a learning tool that can be used anytime and anywhere, accommodating the varied schedules of maritime students who may have demanded and irregular academic and practical training commitments.

**Table 1.** Importance of Flexible Learning Schedule

<b>Response</b>	<b>Percentage (%)</b>
Very Important	77%
Important	20%

<b>Response</b>	<b>Percentage (%)</b>
Neutral	3%
Not Important	0%
Very Not Important	0%

### 3.1.2 Relevance to Maritime Industry

A significant 83% of respondents identified the need for English learning content directly related to the maritime industry as "very important," with 7% marking it as "important." This highlights the necessity for a specialized curriculum that aligns with the professional vocabulary and contexts the students will encounter in their careers.

**Table 2.** Importance of Maritime Industry-Relevant Content

<b>Response</b>	<b>Percentage (%)</b>
Very Important	83%
Important	7%
Neutral	10%
Not Important	0%
Very Not Important	0%

### 3.1.3 Interactive Learning and Simulations

Students expressed a clear preference for interactive learning features, with 77% rating the need for practical simulations and scenarios in English learning as "very important." This suggests that students value real-life simulations that can prepare them for actual maritime situations where English communication is crucial.

**Table 3.** Importance of Interactive Learning and Simulations

<b>Response</b>	<b>Percentage (%)</b>
Very Important	77%
Important	20%
Neutral	0%
Not Important	3%
Very Not Important	0%

### 3.1.4 Multimedia Content

Regarding multimedia content such as video, audio, and animations, 53% of students rated it as "very important," and 43% as "important." This underscores the need for rich, engaging content that can enhance the learning experience and make complex concepts more accessible.

**Table 4.** Importance of Multimedia Content

<b>Response</b>	<b>Percentage (%)</b>
Very Important	53%
Important	43%
Neutral	3%

<b>Response</b>	<b>Percentage (%)</b>
Not Important	0%
Very Not Important	0%

### 3.1.5 Learning Progress Tracking

The ability to track learning progress was deemed "very important" by 70% of students and "important" by 30%. This indicates a strong desire among students to monitor their own progress, which can be a motivating factor and provide valuable feedback for self-improvement.

**Table 5.** Importance of Learning Progress Tracking

<b>Response</b>	<b>Percentage (%)</b>
Very Important	70%
Important	30%
Neutral	0%
Not Important	0%
Very Not Important	0%

### 3.1.6 Access to Digital Resources

Access to supplementary digital resources such as online dictionaries and e-books was also highlighted as crucial, with 70% of students rating it as "very important" and 27% as "important." This indicates the need for easily accessible resources that support their learning beyond the classroom.

**Table 6.** Importance of Access to Digital Resources

<b>Response</b>	<b>Percentage (%)</b>
Very Important	70%
Important	27%
Neutral	3%
Not Important	0%
Very Not Important	0%

The needs analysis highlights several key areas where students require support in their English language learning: There is a strong demand for learning tools that offer flexible access to accommodate the students' varied schedules. Content must be tailored to the maritime industry, ensuring that students are learning language skills directly applicable to their future careers. Practical simulations and interactive features are highly valued, reflecting a preference for active, engaging learning methods. Rich multimedia content is important for making the learning experience more dynamic and effective. Students are keen on tracking their learning progress, which can enhance motivation and provide continuous feedback. Easy access to additional digital resources is essential to support ongoing learning outside of formal instructional settings.

These findings underline the importance of developing a learning tool like the OCEAN application that meets these specific needs, offering a comprehensive, flexible, and industry-relevant learning experience for maritime students.

### 3.2 Preliminary Field-Testing Analysis

The initial field testing of the OCEAN application, which focuses on listening skills, involved a small group of students from the Maritime Vocational Faculty. The results indicate that the majority of students found the application easy to use, with the image and audio features significantly aiding their understanding of the listening material. The interface was rated as highly attractive and user-friendly, contributing to a positive user experience. The audio quality was also deemed satisfactory by the majority of respondents, suggesting that the multimedia elements of the application are effective in supporting learning. The application was also noted to be helpful in exam preparation related to listening skills.

**Table 1:** Student Feedback on the OCEAN Application

Aspect Evaluated	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Ease of Use	70%	30%	0%	0%	0%
Usefulness of Image and Audio	75%	25%	0%	0%	0%
Attractiveness of Interface	65%	35%	0%	0%	0%
Quality of Audio	80%	20%	0%	0%	0%
Helpfulness for Exam Preparation	70%	30%	0%	0%	0%

#### 3.2.1 Main Field Testing and Post-Revisions Analysis

After revisions based on preliminary feedback, a more extensive field test was conducted involving 30 maritime engineering students. The analysis focused on the frequency of application use, perceived differences post-revision, interface appeal, and the effectiveness of the enhanced features.

**Table 2:** Frequency of Application Use After Revisions

Frequency	Percentage (%)
Several times a week	80%
Daily	12%
Occasionally	8%

The data shows that 80% of students used the application several times a week, and 12% used it daily, indicating the application's successful integration into their learning routines.

When asked about the differences felt after the application's revision, 68% of students noted significant improvements, and 32% observed very significant improvements, particularly in the user interface and quality of audio and visual aids.

**Table 3:** Perceived Improvements Post-Revision

Improvement Perception	Percentage (%)
Very Significant	32%
Significant	68%

The revised application interface was rated highly, with 36% of students finding it "very attractive and easy to use" and 64% finding it "attractive and easy to use".

**Table 4: Interface Appeal**

<b>Interface Rating</b>	<b>Percentage (%)</b>
Very attractive and easy to use	36%
Attractive and easy to use	64%

In terms of the impact on listening skills, 36% of respondents felt that the application "greatly improved" their listening skills, while 64% felt that it "improved" their skills.

**Table 5: Improvement in Listening Skills**

<b>Skill Improvement</b>	<b>Percentage (%)</b>
Greatly Improved	36%
Improved	64%

### 3.2.2 Statistical Analysis

A pre-test and post-test were conducted to statistically assess the effectiveness of the OCEAN application. The mean pre-test score was 53.67 with a standard deviation of 14.74, while the mean post-test score increased to 74.67 with a reduced standard deviation of 8.99, indicating not only improved performance but also more consistent results across participants.

**Table 6: Paired Samples Statistics**

<b>Test</b>	<b>Mean</b>	<b>N</b>	<b>Std. Deviation</b>	<b>Std. Error Mean</b>
Pre-Test	53.67	30	14.74	2.69
Post-Test	74.67	30	8.99	1.64

The paired samples t-test revealed a significant difference between pre-test and post-test scores ( $t = -10.515$ ,  $df = 29$ ,  $p < 0.001$ ), with a mean difference of -21.00. This demonstrates that the OCEAN application significantly improved the students' listening skills.

**Table 7: Paired Samples Test**

<b>Paired Differences</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error Mean</b>	<b>95% Interval Difference</b>	<b>Confidence of the t</b>	<b>df</b>	<b>Sig. (2-tailed)</b>
Pre-Test - Post-Test	-21.00	10.94	1.997	-25.08 to -16.92	-10.515	29	< 0.001

### 3.3 Discussion

The findings from this study highlight the significant impact of the OCEAN application on enhancing the listening skills of maritime vocational students. The study aligns with existing literature that emphasizes the role of technology in language learning, particularly in contexts where English is learned as a foreign language.

#### 3.3.1 The Role of Technology in Language Learning

Previous studies have established that integrating technology into language learning can address many of the challenges faced by students in mastering listening skills. As noted by Rahimi (2015), mobile learning can reduce student anxiety in learning listening skills and improve their ability to understand spoken language. The OCEAN application leverages this

by providing a platform where students can practice listening in a controlled, user-friendly environment, which is particularly beneficial in maritime English, where specific terminology and contextual understanding are crucial.

The significant improvement in students' listening skills, as evidenced by the rise in post-test scores, supports the findings of Ahmadi (2018), who demonstrated that technology-enhanced learning improves both in-class and out-of-class language skills. The consistent use of the OCEAN application by students several times a week, as observed in the study, indicates the platform's effectiveness in integrating into the students' daily learning routines, thereby reinforcing the autonomous learning essential for language acquisition.

### **3.3.2 The Effectiveness of Multimedia in Learning**

The use of multimedia elements in the OCEAN application, particularly the combination of images and audio, proved to be a critical factor in its effectiveness. Theories of multimedia learning suggest that combining visual and auditory information can enhance comprehension and retention (Mayer, 2009). This study's results align with this theory, as students reported that the multimedia features of the application significantly aided their understanding of the listening material.

The positive feedback regarding the quality of the application's audio and visual elements suggests that these features helped bridge the gap between classroom learning and real-world application, a challenge often noted in maritime English learning contexts (Utomo et al., 2019). By providing realistic simulations and scenarios related to maritime operations, the OCEAN application helps students develop the specific listening skills required in their future careers.

### **3.3.3 Student Engagement and Learning Motivation**

Student engagement is a critical factor in successful language learning, and the gamification aspects of the OCEAN application appear to have enhanced student motivation. Elaiş et al. (2019) found that game-based learning can reduce foreign language anxiety and increase student motivation, which is reflected in the enthusiastic use of the OCEAN application by students. The consistent use of the application, with a significant portion of students engaging with it multiple times per week, indicates that the application effectively maintained their interest and motivation.

Moreover, the positive reception of the application's user interface suggests that a well-designed, user-friendly platform can further enhance student engagement. Theories of user experience design indicate that ease of use and attractive interface design are essential in keeping users engaged with educational software (Norman, 2002). The findings from this study underscore the importance of these elements, as the OCEAN application's interface was highly rated by students, which likely contributed to their sustained use of the platform.

### **3.3.4 Implications for Future Development**

The study's findings also have implications for the future development of educational technology in language learning. While the OCEAN application was successful in its current form, students indicated a desire for additional features, such as more interactive content and dynamic visuals. These suggestions align with the growing trend towards more immersive and interactive learning environments, which can further enhance engagement and learning outcomes (Pardo et al., 2021).

Additionally, the need for continuous feedback and iterative development is evident. As technology and student needs evolve, so too must the tools designed to support learning. This is particularly true in specialized fields like maritime English, where the application must

adapt to the specific linguistic and contextual demands of the industry. Future research could explore the integration of more advanced technologies, such as artificial intelligence and adaptive learning systems, to further personalize and enhance the learning experience.

### 3.3.5 Limitations and Future Research

Despite its positive outcomes, the study is not without limitations. The relatively small sample size and the specific focus on maritime vocational students may limit the generalizability of the findings. Future research could expand the study to include a broader range of students from different disciplines to assess the applicability of the OCEAN application in other contexts. Moreover, longitudinal studies could provide deeper insights into the long-term effectiveness of the application in improving language skills.

## 4. CONCLUSION

This study aimed to develop and evaluate the OCEAN application as an English language learning tool specifically designed to enhance the listening skills of maritime vocational students. The comprehensive needs analysis, coupled with the subsequent field testing and statistical evaluation, provides strong evidence of the application's effectiveness and relevance in this specialized educational context.

The needs analysis revealed that students have a strong preference for learning tools that are flexible, interactive, and tailored to the specific demands of the maritime industry. These findings guided the development of the OCEAN application, which integrates multimedia content, practical simulations, and progress tracking features to meet these needs.

Field testing demonstrated that the application was well-received by students, with a significant portion using it regularly as part of their learning routine. The positive feedback regarding the application's ease of use, attractive interface, and effective multimedia features further underscores its potential as a valuable educational resource.

Statistical analysis of pre-test and post-test scores confirmed the application's impact on improving students' listening skills, with a significant increase in performance and greater consistency in learning outcomes post-intervention. These results suggest that the OCEAN application not only meets the educational needs of maritime students but also enhances their engagement and motivation, critical factors in language acquisition.

In conclusion, the OCEAN application successfully addresses the specific learning needs of maritime students, offering a flexible, engaging, and effective tool for improving English listening skills. Future development should continue to refine and expand the application's features, incorporating user feedback and advancing technological capabilities to ensure its continued relevance and effectiveness. Additionally, broader implementation and further research could explore its applicability in other specialized language learning contexts, thereby extending its benefits to a wider range of learners.

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