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Investigating the Impact of Barriers on Perceptions of Online Learning for Maritime English Cadets

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ABSTRACT

When the COVID-19 pandemic spread rapidly, teaching and learning had to abruptly shift from face-to-face to online. This research investigates the relationship between barriers and perceptions of online learning during the COVID-19 pandemic in a specific study on oral English communication. To explore the impact of barriers on perceptions of online learning, this mixed-method design research employs both qualitative and quantitative approaches. A sample of 248 cadets was utilized to determine the general relationship between barriers and perceptions of online learning. Additionally, semi-structured interviews were conducted with 10 cadets to identify specific barriers in this particular context. The results from the survey questionnaire analysis using Smart PLS revealed that the empirical SEM PLS investigation indicates how barriers negatively influence perceptions of online learning. Interview findings highlighted issues such as internet connectivity problems, limited teaching aids, lack of focus, and inadequate communication between instructors and cadets as major barriers affecting maritime English education. In conclusion, this study emphasizes the creation of a supportive and interactive environment for successful online learning among maritime English learners. Enhancing strategies such as facilitating teacher-student interaction, integrating multimedia resources, and providing timely feedback can enhance student engagement leading to improved quality and accessibility in their academic outcomes.

1. Introduction.

In 2020, as COVID-19 continued to spread in Indonesia, the Indonesian government implemented policies enforcing restrictions on community activities to prevent its spread. It tightens various activities including all educational endeavors conducted online (Setiawan, 2021).

Maritime schools also had to adapt to these policies, one of which involved English learning activities in maritime schools, previously conducted face-to-face, having to swiftly transition to fully online learning. The COVID-19 pandemic posed a unique challenge to this online learning, as prior to the pandemic, English maritime education emphasized practical training more than theory. From the first to the fourth semester, learning took place in laboratories and classrooms in both theoretical and practical forms. In the fifth and sixth semesters, learning involved direct interaction practices at ports and shipping companies, as well as experiencing on board at ships.

Proficiency in English language within maritime contexts is crucial for maritime school students. English serves as the international language for maritime communication with various communication needs at sea, such as communication among crew members, passengers, and coastlines, which is beneficial for efficiency, work safety, and crew socialization. Mastery of speaking skills becomes the most important skill among higher maritime education competencies aimed at reducing incidents at sea, especially due to communication issues.

As the COVID-19 pandemic persisted and required adjustment to government policies, adjustments in learning material

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and face-to-face speaking skill practices needed to be transitioned to online learning, especially for maritime English oral communication. In English language learning, oral communication is more challenging and difficult than other language skills, thus presenting various obstacles in the transition process to online learning.

The transition to online learning did not occur smoothly. Experiences from various countries regarding this type of learning vary, presenting advantages, barriers, positive perceptions, and negative perceptions of online learning processes. Studies from several previous researches, from the perspective of students, have found advantages, barriers, positive perceptions, and negative perceptions of online learning (Damoun et al., 2023; Rahman et al., 2023; Samelli et al., 2023). Many countries have conducted research on online learning during the COVID-19 pandemic, especially in the field of health such as medicine in Turkey (Arslan et al., 2023), nursing in Arab Saudi (Benjamin et al., 2021) and health technology education in India (Chunkhare & Jadhav, 2022). However, research focusing on online learning specifically for maritime English oral communication remains limited.

Peñalver & Laborda. (2021) conducted research on online learning cases in oral communication skill in English for general purposes. It explores the use of technology impacting communication skills for general English learning during the COVID-19 pandemic, where online learning affected student learning progress. Although group video and audio call media are useful tools for communication in this learning setting, the lack of direct face-to-face meetings makes students uncomfortable with the online learning model.

In Ukraina (Kudryavtseva et al. (2023) and China (Shi & Fan. (2021) have conducted research on online maritime English learning. Although in China, it was in the context of COVID-19 and in Ukraine, it was in the context of wartime conditions, both situations shared similarities in emergency contexts. The research results from both found barriers to online maritime English learning. In the context of Ukraine, active online learning was significantly positive for Maritime English students in a country under military emergency, whereas in China, online English maritime learning was criticized, finding students still struggle to apply learning outcomes to their real-world jobs. Both studies discuss barriers faced by students when learning online, but they do not specifically explain how these barriers affect perceptions of online learning. Although there is a relationship between perceptions affecting student barriers in online learning in the context of classroom and laboratory biology and molecular genetics learning (Hsu & Rowland-Goldsmith, 2021). Existing research, especially in the field of maritime English oral communication, is still limited in explaining the influence of barriers on perceptions of online learning. Research explaining the relationship between learning barriers and perceptions, specifically the influence of learning barriers on online learning perceptions in the context of English oral communication learning during the COVID-19 pandemic.

Our research intends to identify barriers in online learning in maritime English oral communication and also explore the relationship between the influence of barriers on perceptions of online learning. Using a mixed-method approach, quantitative methods will be used to identify the influence of barriers on online learning perception and qualitative methods to delve deeper into online learning barriers. The recommendations from our research, hopefully, can provide progress and benefits in speaking skill practices during online classes in the context of maritime English learning in the future.

Research Questions:

RQ1: Do barriers influence perceptions in online learning MEOCS?

RQ2: What are the barriers encountered during online COVID-19 MEOCS learning?

2. Literature Review.

During the COVID-19 pandemic, online learning emerged as the choice for continuing the learning process. Many advantages of online learning were discovered during the pandemic. Some of these advantages include time efficiency, flexible classes, reduced travel costs, and new learning experiences. Table 1 of previous studies presents some of the benefits obtained from online learning during the COVID-19 pandemic.

Table 1: Online learning Advantages.

Category	Advantages
Accessibility and time saving	Stay at home, no transportation problem (Arslan et al., 2023; Damoun et al., 2023; Dergham et al., 2023; Rahman et al., 2023), Flexibility in time (Dergham et al., 2023), Flexibility in place that ability for residents to participate while off-site (Carpenter et al., 2022), Time saving that reduces the time the students take going from one place to another (Giannoulas et al., 2021; Samelli et al., 2023; Yu et al., 2023).
Flexibility classes	I enjoy taking online classes because it is easy to attend (Abed et al., 2022), continuous access to online materials (Arslan et al., 2023; Carpenter et al., 2022; Dergham et al., 2023; Rahman et al., 2023) dan increase flexibility (Damoun et al., 2023; Samelli et al., 2023; Yu et al., 2023).
Cost Benefits	The potential for reducing costs (Arslan et al., 2023; Damoun et al., 2023; Dergham et al., 2023).
Learning Experience	Ability to ask questions, Interactive and Ability to learn at own pace (Dergham et al., 2023); development of new skills, the convenience of attending courses in their own environment, time and pace, and the improvement of ICT skills (Giannoulas et al., 2021); high-quality certifications, improving knowledge and skills, enhancing personal development, and having chances for higher education and career advancement (Ngo et al., 2023); improve professional skills and develop communications skills (Samelli et al., 2023).

Source: Author.

a. **Online learning Barriers.**

Barriers to online learning present challenges that affect learning capabilities encountered during the online learning process. Understanding these barriers in online learning is crucial for the development and effectiveness of online education, enabling the maximization of online

learning to improve learning outcomes, comprehend student challenges, and motivate them to enhance course completion rates. It also involves adapting learning experiences to various learners' needs and enhancing self-directed learning, contributing to personal growth and skill development. Previous research has identified barriers in online learning, which are categorized into technical and non-technical barriers. Various obstacles encountered, with the majority being poor internet connectivity, as evident in the table below.

Table 2: Online learning barriers.

Category	Barriers
Technical Challenges:	
Access	Insufficient access to the internet (Abed et al., 2022; Alqahtani et al., 2022; Alqudah et al., 2023; Benjamin et al., 2021; Damoun et al., 2023; Dergham et al., 2023; Enwereji et al., 2023; Giannoulas et al., 2021; Iqbal et al., 2022; Means & Neisler, 2021; Zalat et al., 2021), The financial implications of internet connectivity (Abed et al., 2022; Enwereji et al., 2023; Zalat et al., 2021; Zapata-Garibay et al., 2021), The lack of access to electrical power (Iqbal et al., 2022), Insufficient availability of electronic devices computers or laptops (Benjamin et al., 2021; Zalat et al., 2021).
Technical Issues	Issues related to hardware and software systems (Means & Neisler, 2021; Rahman et al., 2023), Challenges in Utilising the Platform (Damoun et al., 2023; Giannoulas et al., 2021), the occurrence of frequent connection issues (Giannoulas et al., 2021), Insufficient internet bandwidth (Alqahtani et al., 2022), The occurrence of technical difficulties during online classes (Giannoulas et al., 2021), The lack of capability in voice and video communication (Giannoulas et al., 2021).
Non-Technical Challenges:	
Learner Engagement	Lack of drive or enthusiasm (Alqudah et al., 2023; Carpenter et al., 2022; Damoun et al., 2023), Challenges in Effective Time Management (Samelli et al., 2023; Zapata-Garibay et al., 2021), A suboptimal domestic setting characterized by various distractions (Alqudah et al., 2023; Arslan et al., 2023; Damoun et al., 2023; Iqbal et al., 2022; Samelli et al., 2023), Inability to focus (Giannoulas et al., 2021), Common negative emotions include loneliness and isolation (Giannoulas et al., 2021), The absence of engagement with instructors and students (Benjamin et al., 2021; Damoun et al., 2023; Enwereji et al., 2023; Giannoulas et al., 2021; Shi & Fan, 2021).
Instructional Issues	Inadequate course structure and organization (Giannoulas et al., 2021), Lack of feedback from instructors (Giannoulas et al., 2021), Insufficient online learning materials (Shi & Fan, 2021), Challenges in comprehending and adhering to online instructions provided by teachers (Zapata-Garibay et al., 2021) lack of opportunity to apply theoretical knowledge in practical situations (Yu et al., 2023), The phenomenon of heightened workload and information overload (Muilenburg & Berge, 2005).

Source: Author.

b. **Online learning Perceptions.**

The students' perception of online learning is defined as their opinions while engaging in online education, as well as their experiences while observing and experiencing such learning (Ngo et al., 2023). Understanding students' perceptions of online learning is crucial, especially in maritime English education, particularly in speaking classes. Understanding students' perceptions can help identify the extent of the benefits of online learning, comprehend students' perceptions to articulate encountered barriers in online learning, all of which aim to enhance the quality and effectiveness of online learning to meet the needs of English language learning, especially in the maritime field.

There are several positive perceptions regarding online learning. Students report that online learning can be more efficient and satisfying than traditional face-to-face learning, especially when there is open communication and support between students and instructors. E-tutoring services are also considered helpful by students, providing them with access to learning resources and enhancing their engagement with the material. Moreover, the majority of participants agree that online learning is beneficial and user-friendly. The most common negative perception of online learning is that it is less effective for social interaction and learning effectiveness. Students also report feeling overwhelmed by the technology required for online learning. Overall, there are both positive and negative perceptions of online learning. Table 3 illustrates the categorization of positive perceptions of online learning based on previous studies:

c. **Hyphotesis Development.**

Internet connection, internet costs, and other technical skills pose as obstacles in online learning. Although facing the same obstacles, various opinions regarding online learning exist. Enwereji et al. (2023) found positive perceptions: e-tutoring was positively perceived by students, with most feeling assisted in their learning and academic progress. Conversely, other studies found negative perceptions; transitioning to distance courses was challenging (Zapata-Garibay et al., 2021), satisfaction levels were much lower after courses shifted online (Means & Neisler, 2021), despite having more time with online classes, learning was better in face-to-face settings (Abed et al., 2022).

Social interaction as a barrier encountered in previous OL research, such as miscommunication among group peers (Yu et al., 2023), instructors (Damoun et al., 2023; Ngo et al., 2023) and patients (Rahman et al., 2023). As well as online learning interaction forms unable to develop actual communication skills (Shi & Fan, 2021). Some previous studies found positive perceptions of their experience in e-service-learning during the pandemic (Damoun et al., 2023; Ngo et al., 2023; Yu et al., 2023). However, some previous studies also found negative perceptions from students' perspectives, indicating that traditional teaching methods were far more common than on-

Table 3: Online learning perceptions.

Categories	Previous Study
Positive Perceptions	
Communication and Support	"Open communication in online learning increases trust between students and teachers"(Abed et al., 2022); The level of satisfaction with online learning will increase with students who are more experienced, trained and have adequate learning support (Alqahtani et al., 2022); Older respondents and supporters of the transition to online learning said they encountered fewer obstacles than others (Alqahtani et al., 2022); Online learning is more useful because it helps student involvement and makes communication easier in learning (Enwereji et al., 2023).
Efficiency and Satisfaction	Good perception with high satisfaction with online learning (Alqahtani et al., 2022); students feel online education is more efficient (Arslan et al., 2023; Damoun et al., 2023).
Perceived Usefulness and Ease of Use	High perception of the ease and usefulness of online learning (Zalat et al., 2021); positive experience on online learning (Yu et al., 2023).
Negative Perceptions	
Social Interaction	Students suggest hybrid online and offline learning (Carpenter et al., 2022); restrictions on social activities are a barrier to carrying out simulations in the learning process (Carpenter et al., 2022); students prefer face-to-face learning (Dergham et al., 2023); for the development of social competence cannot replace face-to-face learning (Rahman et al., 2023; Samelli et al., 2023).
Learning Effectiveness	Online learning has a negative impact on surgical education studies (Carpenter et al., 2022); The level of satisfaction with online learning is lower compared to face-to-face learning (Means & Neisler, 2021); Face-to-face learning is more effective than online learning (Rahman et al., 2023); Online learning encounters many difficulties in following instructions by lecturer (Zapata-Garibay et al., 2021).
Technical Challenges	Students feel stumped in using technology (Zapata-Garibay et al., 2021).
General Preference	Students prefer face-to-face learning (Alqudah et al., 2023; Dergham et al., 2023; Papa et al., 2023; Samelli et al., 2023; Shi & Fan, 2021); The community is more supportive of hybrid learning options (Carpenter et al., 2022)Online learning is a good alternative during the pandemic, but it cannot replace face-to-face learning (Samelli et al., 2023);

Source: Author.

line teaching method (Shi & Fan, 2021). E-learning was considered less effective than face-to-face learning in terms of enhancing skills and social competence (Rahman et al., 2023).

Environmental support was found to be a barrier. An unsatisfactory home learning environment (Alqudah et al., 2023), disturbances from family, pets, and the home environment (Arslan et al., 2023). Arslan et al. (2023) found positive perceptions of online learning; participants perceived online education as more efficient than face-to-face education, with 24.6% satisfied with the ongoing online education process. However, (Alqudah et al., 2023) found negative perceptions; the majority of students preferred face-to-face education over online learning environments.

In various aforementioned previous studies, despite facing the same obstacles in online learning, some found positive perceptions despite encountering online learning challenges, while others with the same obstacles found negative perceptions.

In this study, we formulated the following hypothesis:

H: Barriers are negatively associated with perception in online learning MEOCS?

3. Methodology.

The study aims to obtain knowledge about the influence of barriers on perceptions of online learning. To understand the influence of barriers on perception in online learning MEOCS, quantitative analysis was used, while qualitative analysis was used to identify barriers encountered by students during online learning in COVID-19 MEOCS.

3.1. Study Design.

Data were collected using a web-based Google Form questionnaire. For the first data collection stage, it was distributed to all participants via WhatsApp, and for the second data collection stage, students were asked to fill out the form before starting their learning in class. In the second data collection, student cadets filled out the shared form before beginning teaching and learning. Additionally, semi-structured interviews were conducted with 10 cadets to understand the barriers of online English maritime learning.

3.2. Setting and Participants.

This research was conducted at the Polytechnic College of Maritime Sciences, Semarang, Central Java. The student cadets were from levels three, five, and seven of the nautical, technical, and port and shipping management programs. Convenience sampling was used for participant selection. The participants were chosen because they experienced online learning during the COVID-19 pandemic, thus providing relevant information for this study, and they voluntarily participated in this research.

3.3. Variable Instrumentation.

Data for this study were obtained through a web-based questionnaire and semi-structured interviews with English language cadets. The questionnaire was developed adopting from Baticulon et al. (2021); Desalegn. (2020) dan Diaab. (2016). Additionally, semi-structured interviews were conducted due to the need to delve deeper into online learning experiences and the challenges they encountered during the learning process. The questions aimed to explore (1) participants' preferences for technology platforms; (2) choices of materials and activities that cadets need to do in online learning to improve their oral performance; and (3) expectations for online learning technology platforms that are suitable for cadet needs and interests. Scores in this study were assessed as: 1) strongly disagree, 2) disagree, 3) agree, and 4) strongly agree. Lastly, data analysis from the semi-structured results was transcribed to support and deepen the findings obtained from the questionnaire.

3.4. Key Data analysis Techniques including tool.

To understand the influence of barriers on perceptions of online learning, SEM model analysis techniques were used to bivariately relate latent variables (barriers) with observable variables (perception) using SmartPLS 3.0 software. To gain in-depth information about online learning barriers, data analysis was conducted from the transcribed results of the semi-structured interviews to identify encountered barriers during online learning.

Confirmatory research with a bivariate regression model using SEM-PLS with reflective model indicators. This was done in two stages of analysis: outer model analysis (factor analysis) by conducting Convergent Validity, Discriminant Validity, and Reliability testing, followed by inner model analysis (hypothesis analysis) by evaluating Collinearity, Model accuracy level, Prediction relevance, Hypothesis significance, and the effect of exogenous variables on endogenous ones.

To obtain a valid and reliable model, indicators of endogenous and exogenous variables were evaluated, and then gradually eliminated.

4. Result and Analysis.

This study aims to determine the influence of barriers on perceptions of online learning in maritime English oral speaking practice classes. Table 4 shows that the nautical program is dominant in filling out this questionnaire and students currently in the third step.

4.1. Hypothesis Testing.

4.1.1. Outer Model Testing.

The initial process to test the reliability and convergence of the model. The preliminary testing was conducted with the results shown in Figure 5. Several indicators were found to be invalid. These indicators were then eliminated, and testing was conducted again.

Table 4: Students Demographic.

Maritime Students	N. (248)	Percent (%)
Program:		
Nautical	147	59%
Port and shipping management	26	10%
Technical	75	30%
Semester:		
2nd	22	9%
3rd	108	44%
4th	23	9%
7th	72	29%
8th	23	9%

Source: Author.

Table 5: Initial model testing.

Construct	Items Code	Outer Loadings	Cronbach's α	CR	AVE
Barriers	B1	0.543	0.945	0.943	0.584
	B2	0.599			
	B3	0.697			
	B4	0.803			
	B5	0.824			
	B6	0.659			
	B7	0.829			
	B8	0.798			
	B9	0.763			
	B10	0.833			
	B11	0.854			
	B12	0.883			
Perceptions	P1	0.622	0.885	0.898	0.495
	P2	0.661			
	P3	0.775			
	P4	0.702			
	P5	0.751			
	P6	0.735			
	P7	0.737			
	P8	0.665			
	P9	0.669			

Source: Author.

After the process of eliminating several indicators, a retesting was conducted to achieve valid and reliable results, as shown in Table 6.

Table 6: Final Outer Model.

Construct	Items Code	Measurement Items	Outer Loadings	Cronbach's α	CR	AVE
Barriers	B3	I have limited vocabulary to communicate with lecturers and classmates during online class	0.721	0.941	0.949	0.675
	B4	I have problems due to the use of devices in listening and speaking practice	0.808			
	B5	I get difficulty in understanding the speaking materials during online class	0.820			
	B7	I have lack of motivation to speak because the use of online technology in learning doesn't attract my attention	0.842			
	B8	I cannot increase my speaking ability using online technology platform	0.814			
	B9	I have lack of sufficient level of knowledge and technical skills for the use of multimedia, internet and web technology for online learning	0.788			
	B10	I have no sufficient time to practice speaking during online class	0.841			
	B11	I have not been given adequate opportunities to practice speaking in online learning	0.870			
	B12	I get confused in practicing speaking during online class	0.879			
Perceptions	P3	I can develop my confidence through practicing speaking using technology	0.783	0.773	0.850	0.586
	P5	I think practicing speaking skills through online technology platform more fun and challenging	0.715			
	P6	I think the material provided in online learning help me to improve my ability in speaking English	0.745			
	P7	I think the use of online learning saves effort and time	0.817			

Source: Author.

4.1.2. Inner Model Evaluation.

The evaluation results of the inner model regarding the relationship between barriers and perceptions indicate the accuracy level of the model below the threshold value of 0.19, indicating that this model has a weak accuracy level. However, this model remains relevant for depicting the relationship between barriers and perceptions ($Q2 > 0$). The effect of student barriers on online learning perception is small (0.049). For hypothesis testing, barriers are related to learning perception (significance level 1%), both negatively correlated. As these barriers increase, students' positive perception of online learning decreases.

Table 7: Analysis of relationships and influences.

Type of Evaluation	Result	Assessment of Criteria (Chin & Marcoulides, 1998; Sarstedt et al., 2017)
Inner VIF Values	1.000	Collinearity VIR < 3,3
R^2	0.047	≥ 0.19 (weak)
Q^2	0.020	Prediksi relevansi $Q^2 > 0$ (relevan)
f^2	0.049	Efek dari Variabel eksogen ke Endogen $f^2 \geq 0.02$ (kecil)
Original Sample	-0.216	terdapat pengaruh negatif barriers terhadap persepsi
P Values	0.007	Significant Level: 1%
T Statistics	2.715	P Values < P Level (0,01) & T Statistic > T Sig (2,58)

Source: Author.

4.2. Student Interviews on Online Learning Experience.

To obtain deeper insights into maritime English learning during COVID-19, interviews with cadets were conducted to gather information about the barriers they encountered during online learning and their opinions on online learning.

From interviews with several students, internet connectivity emerged as a common barrier in online learning, despite most students having devices for online learning such as mobile phones, laptops, and personal computers. Additionally, the need for specific English learning aids, especially during exams, was highlighted. Other barriers related to their internal conditions were identified; difficulties in asking questions when faced with challenges made students less focused and less enthusiastic about participating in learning. Another significant barrier was the lack of interaction between lecturers and students, leading students to easily get distracted by activities around them, which hindered the effectiveness of online learning.

5. Discussion.

This study aimed to explore the relationship between barriers and positive perceptions of online learning in maritime oral English education during COVID-19. It also aimed to identify the barriers encountered by students during online learning amid the pandemic. Previous research on online learning during COVID-19, especially for maritime oral English studies, is limited. This study investigated the barriers faced by students and their impact on perceptions of online learning. The findings are crucial for addressing these gaps and providing solutions to enhance the progress and effectiveness of online maritime English learning in the future. The study found that as student barriers to online learning increased, students' positive perceptions of online learning decreased. Some barriers identified included limited vocabulary, device issues, difficulty in understanding speaking material, lack of motivation and attention, online technology platforms, lack of knowledge about online learning technology, inadequate practice time for speaking in online learning, and confusion during practice.

Table 8: Interviews about student barriers.

Category	Barriers	Sample Student Respond
Technical Challenges:		
Access	Signal of internet, limited data to access, unstable internet during bad weather	"Sometimes the network is lost for both lecturers and cadets"
Technical Issues	Limited teaching aids which result in lack of understanding during the exam. Limited zoom time Students are still in the cloud with e-learning Applications	"During practical learning you should be able to feel the props, not just see them." "We only get 1 hour to access the application"
Non-Technical Challenges:		
Learner Engagement	The topic is difficult to understand by using online, difficult for practice class, you can't ask questions so you're confused yourself, lack motivation, lack of focus, and they are not disciplined.	"Many choose other activities instead of joining Zoom" "I'm not enthusiastic about online learning"
Instructional Issues	External disturbances and internal disturbances Lack of interaction between lecturers and cadets.	"There are times when I'm online distracted by activities around me" "interaction online is not optimal"

Source: Author.

5.1. Theoretical Implications.

Positive perceptions of online learning are negatively associated with barriers encountered by students. When students perceive online learning as enjoyable and beneficial in terms of enhancing skills while saving energy and time, this belief diminishes when they face numerous obstacles in online learning. These findings are essential for maximizing online learning; thus, instructional design can focus more on reducing these barriers.

The findings of this study are consistent with previous research that has explored barriers and perceptions of online learning in various educational contexts, emphasizing the importance of considering specific disciplinary challenges and inter-

ventions in designing online learning experiences. By extending this research to the field of maritime English learning, we contribute to a broader discussion on effective online education in specific fields. Furthermore, our findings align with similar research showing how increased barriers in online learning can decrease students' positive perceptions of online learning (Damoun et al., 2023; Yu et al., 2023). Addressing and minimizing these barriers is crucial for maintaining and enhancing students' positive perceptions of online learning (Ngo et al., 2023; Zapata-Garibay et al., 2021). In conclusion, research consistently demonstrates that increased barriers in online learning have the potential to decrease students' positive perceptions of online learning.

The interviews conducted revealed findings related to technical barriers concerning communication access, including limited data access and disruptions due to unstable internet connections during bad weather. Additionally, related studies have identified technical issues such as internet connectivity problems affecting the online learning experience (Abed et al., 2022; Dergham et al., 2023; Peñalver & Laborda, 2021). Based on these findings, increased barriers in online learning can negatively impact students' perceptions of online learning. Therefore, it is crucial for educational institutions to invest in addressing these technical barriers and provide necessary support to ensure a positive online learning experience.

Similar to Carpenter et al. (2022), this research highlights barriers such as limited simulation tools leading to a lack of understanding during exams, limited Zoom time, and students' unfamiliarity with e-learning applications. These findings underscore the importance of addressing challenges specific to certain disciplines in online learning. It is clear that these barriers can have a negative impact on students' perceptions and experiences in online learning, emphasizing the need for targeted interventions and support. Educational institutions must effectively address these obstacles to enhance students' experiences in online learning.

One of the obstacles in specialized maritime English online learning is the limitation of simulation tools, causing confusion among students during exams. This aligns with (Shi & Fan, 2021), who found that a lack of appropriate simulation tools can lead to confusion and challenges in assessing student learning in an online environment. Another challenge identified in maritime English online learning is the difficulty in simulating practical scenarios and providing hands-on experiences. This can significantly impact students' ability to apply their knowledge and skills in real-world maritime situations.

In this research interview, instructional issues were identified, such as the lack of interaction between lecturers and cadets. Previous research by Dergham et al. (2023) identified instructional barriers including ineffective communication compared to face-to-face interactions, hindering teacher-student interactions in online learning. For example, 19% of students mentioned that their instructors or teaching assistants were unresponsive to questions, indicating potential barriers to effective engagement with online formative assessments(Upchurch et al., 2022). Therefore, it is essential for educational institutions to address these instructional issues and promote effective communication and interaction between teachers and students in the online learning environment.

5.2. Practical Implication.

Despite the limitations of this study, the findings provide insights for designing online maritime oral English learning programs. By identifying barriers in this field of education, preventive measures can be taken in planning to minimize these barriers. Policymakers and educational institutions can work together to mitigate barriers in online learning, thus promoting productive online learning environments.

The practical implications of technical barriers in online maritime English learning highlight the need for educational institutions to ensure that students have access to reliable high-speed internet connections. This is necessary for students to fully participate in online learning activities and engage with course materials. Institutions should invest in infrastructure and support systems to address technical challenges such as internet signal strength, limited data access, and disruptions due to unstable internet connections during adverse weather conditions. Additionally, providing technical support and resources to students can help mitigate the impact of internet connectivity issues on their online learning experience.

In specific fields like maritime English learning, the practical implications of this research finding suggest that educational institutions should consider specific disciplinary challenges when designing online learning experiences. This may involve developing and integrating simulation tools that accurately represent practical scenarios, provide hands-on experiences, and allow students to apply their knowledge and skills in real-world maritime situations. Investing in resources and technology that bridge the gap between theoretical knowledge and practical application can significantly enhance the quality of online education in specialized fields.

Addressing instructional issues, such as the lack of interaction between teachers and students, is crucial for educational institutions. Promoting effective communication and interaction in the online learning environment can be achieved through training and support for teachers to facilitate meaningful interactions with students. Encouraging responsive and easily accessible communication channels, as well as providing guidance on effective instructional practices in virtual environments, can help overcome barriers to interaction and improve student engagement with online formative assessments.

The implications of this research underscore the importance of taking a comprehensive approach to addressing technical and non-technical barriers in online maritime English learning. By prioritizing these areas, educational institutions can better support students and optimize their online learning experiences in specialized fields. Furthermore, the practical implications are relevant to managers, practitioners, policymakers, and other stakeholders involved in shaping the future of online education, highlighting specific actions and investments needed to enhance the quality and accessibility of online learning for maritime English students.

5.3. Limitation and Future Research Directions.

The limitations of this study include its specific focus on maritime English learning. Future research can explore the effectiveness of similar strategies in other disciplines or fields of study. Moreover, future research can investigate the impact of different instructional practices on student engagement and learning outcomes in virtual settings. Further exploration of technology's role in addressing barriers faced by maritime English learners online is also needed. By examining these areas and conducting further research, educational institutions can continue to improve their online maritime English learning programs and meet the unique needs and challenges faced by students in this specific context.

The potential limitations of this study include a small sample size, which may restrict the ability to generalize findings. Further research with a larger sample size would provide a more comprehensive understanding of specific actions and investments needed to enhance the quality and accessibility of online learning for maritime English students.
Sampling Technique The sampling technique used in this study could also be a limitation. Researchers employed convenience sampling, which can introduce bias and limit the generalizability of findings to a broader population of maritime English students. Therefore, caution should be exercised when interpreting and applying the results to other contexts or populations. Additionally, reliance on self-reported data through questionnaire use can introduce response bias and limit the accuracy of findings.

Conclusions.

In conclusion, this research underscores the importance of creating a supportive and interactive online learning environment for maritime English learners. By employing various strategies such as promoting interaction between teachers and students, incorporating multimedia resources, and providing timely feedback, educators can enhance student engagement and learning outcomes. This study also emphasizes the need for further research to explore the effectiveness of different instructional practices and the role of technology in overcoming barriers and challenges faced by English learners in maritime environments, both online and offline.

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