The Role Of Technology In Developing ESP Learning Materials

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Abstract

This study aims to explore the role of technology in the development of English for Specific Purposes (ESP) learning materials in the English Education Study Program, Faculty of Culture, Management and Business, Mandalika University of Education. The use of technology in ESP learning is believed to increase student engagement, enrich learning materials, and improve understanding of specific and technical topics. This study used a quantitative approach with a descriptive design, involving 25 students as respondents selected by purposive sampling. Data were collected through questionnaires, interviews, and classroom observations. The results show that the majority of students (80%) use online learning platforms such as Google Classroom and Moodle, and 70% of students find it easier to understand the material through learning videos. However, there are constraints in terms of limited technological skills and device accessibility, with 40% of students reporting difficulties using more complex applications. In addition, lecturers also expressed the need for further training in the use of technology for the development of ESP materials. This study concludes that although technology provides significant benefits in ESP learning, its integration requires more in-depth training for lecturers and improved technology infrastructure in higher education to maximize its potential.

Keywords:*Technology, development of ESP materials, online learning, multimedia, technology skills, English language teaching*

INTRODUCTION

In education, especially at the university level, the use of technology in learning has become inevitable. The rapid development of technology not only affects the way we interact in our daily lives, but also the way we access information, communicate, and of course, the way we learn. For students studying English for Specific Purposes (ESP), technology becomes a tool that allows them to access materials that are more varied, interactive and suited to their specific needs.

ESP is an approach to language teaching designed to meet specific language communication needs in academic, professional or industrial contexts. Therefore,

the material taught in ESP should be highly relevant to the practical needs faced by students, for example in the world of work or in academic research. To that end, technology serves as an important link that not only enables students to learn language skills more efficiently, but also allows them to access materials that are not limited by time and place. For example, technology enables multimedia-based teaching, the use of online learning platforms, and artificial intelligence-based applications that can be customized to suit individual needs.

The importance of technology in the development of ESP materials has been discussed by many researchers before [1]. for example, emphasize that the use of various types of learning materials, including internet-based technology and multimedia, not only increases students' ability to process information quickly, but can also expand their access to a more varied range of texts relevant to their field of study. Technology also allows learning materials to be more interactive, making students not only passive recipients, but also actors who are actively involved in the learning process.

In addition, [2]vv states that technology, particularly audio and video-based learning materials, has a major influence in increasing student engagement and motivation. In ESP learning, this is particularly important, given the amount of technical and specific material that students must understand. By using learning videos, interactive simulations and podcasts, students can gain a deeper understanding of language use in a more real and practical context. For example, in the field of business, students can learn how to communicate in business presentations through videos or even participate in

simulations that involve the proper use of business language.

In addition to the interactivity and flexibility aspects, technology also enables the customization of learning materials to various student learning styles. [3] reveal that it is important to align learning materials with students' interests and needs, so that they are more interested and motivated to learn. In the context of ESP, technology can provide tools to customize materials according to students' specific needs, whether it is in the medical, engineering, or business fields. Therefore, the development of technology-based ESP materials is crucial to ensure that they are not only relevant but also effective in helping students master the language skills they need to communicate in the professional world.

However, despite the many benefits it offers, there are a number of challenges that need to be addressed in the integration of technology into the development of ESP materials. One of the main challenges is the limited access to technology. In many universities, especially in developing countries, there are still many students who face obstacles in accessing technology-based learning tools due to limited hardware and adequate internet connection. In addition, not all lecturers have sufficient skills to utilize technology effectively in their teaching. Richard (2001: 45) highlights that the development of technology-based curriculum and learning materials requires strong support from the university, both in terms of lecturer training and the provision of adequate infrastructure.

Another challenge is the need to ensure that technology used in learning actually supports educational objectives and is not just used because of the technological advances available. For example, the use of an online learning platform or a particular app should be appropriate to the academic and professional needs of the students and should be used in the right way in order to improve learning outcomes. This requires a careful approach in designing and selecting the technological tools to be used in ESP learning.

In the context of ever-evolving globalization, the ability to communicate in English at professional and academic levels is increasingly necessary. This requires students to have language skills that are not only good in general, but also specific to their field of study, such as in business, technology, medicine, or engineering. English for Specific Purposes (ESP) is therefore a highly relevant approach to teaching English in higher education. Technology, with its ability to provide varied and customizable materials, has an important role in supporting the development of more effective and relevant ESP materials.

As [4] explains, critical thinking skills and the ability to evaluate information are becoming increasingly important in a digitally connected professional world. Therefore, technology not only serves as a tool to deliver material, but also as a means to train students to process information in a more effective and critical way. As stated by Cahyono and Widiati (2006: 36), the use of technology allows students to access a wide variety of texts relevant to their field of study, which is especially important in the context of ESP where accuracy and specificity of language are highly prioritized.

Furthermore, the use of technology in language teaching can also increase student engagement in the learning process. Technology allows for more interactive and more accessible delivery of materials, which can increase students' motivation to learn. Suarcaya (2011: 59) states that multimedia-based technologies, such as video, audio, and interactive simulations, not only increase student engagement, but can also provide a deeper understanding of the material being taught. This is in line with research conducted by Imran and Hidayatullah (2020: 51), which emphasizes the importance of tailoring learning materials to students' interests and needs to improve learning effectiveness.

However, despite the many advantages of technology, there are still many challenges in integrating technology in language teaching. One of the main challenges is the limited access to technology in many educational institutions. Richard (2001: 45) reveals that integrating technology in education requires adequate infrastructure as well as proper

training for lecturers and students. In many cases, although technological tools are available, not all lecturers have sufficient skills to utilize them to their full potential.

In addition, technology in language teaching also faces the challenge of developing materials that suit the specific needs of each student. For example, the use of online learning applications or platforms must be appropriate to the students' language proficiency level and their field of study. As stated by [5], the development of ESP materials must accommodate the very specific professional needs of students, both in academic and industrial contexts. Therefore, the ESP materials developed should match the relevant topics and meet the specific objectives in each field of study.

According to [6], one of the biggest advantages of using technology in language learning is its ability to provide immediate feedback to students. This feedback is crucial in helping students understand their mistakes and improve their language skills more efficiently. It also supports the development of ESP materials that are more responsive to students' individual needs.

In addition, research by [7] shows that the use of technology in language learning is not only limited to material delivery tools, but also as a means to enhance collaboration between students. Platforms such as online discussion forums, virtual classes, and file sharing tools allow students to work together and share information with each other more efficiently, which greatly supports the development of professional communication skills in ESP.

However, as [8] point out, one of the challenges is to ensure that the technology used in language teaching remains relevant to the curriculum and learning objectives. They argue that although technology offers many benefits, the selection of the right technology for each learning context must be done carefully so as not to disrupt the main focus in language teaching.

In addition, it is important to note that technology can increase the accessibility of learning, allowing students to study outside of class and access materials anytime and anywhere. According to Jamaludin (2016: 45), technology-based learning provides flexibility that is particularly important in higher education, where students often have tight schedules and limited time to study outside of class time.

On the other hand, in line with [1], technology can also be a tool to support more personalized and adaptive learning. By utilizing artificial intelligence (AI) and data-driven learning systems, technology can help create learning experiences that are tailored to the needs and abilities of individual students, which is especially important in the context of ESP that focuses on specific communication objectives.

Thus, it can be concluded that despite the challenges that need to be overcome, technology still plays a very important role in the development of ESP learning materials. Through the proper utilization of technology, ESP learning materials can become more engaging, relevant, and effective in meeting the specific needs of students in various professional and academic fields. Therefore, it is important for educators and educational institutions to continue to explore and optimize the use of technology in the development of ESP materials to improve the quality of English language education in the future.

This research aims to explore the role of technology in the development of ESP learning materials for 6th semester students of English Education Study Program, Faculty of Culture, Management, and Business at Mandalika University of Education. The research will also assess how students use technology in their learning process and how technology can support their specific needs in English language acquisition for specific purposes. By understanding the extent to which technology can enhance the development of ESP learning materials, it is hoped that the results of this study can provide recommendations for the development of more effective and relevant curricula and learning materials in the future.

RESEARCH METHODS

This study uses a quantitative approach with a descriptive design to explore the role of technology in the development of English for

Specific Purposes (ESP) learning materials in the English Language Education Study Program, Faculty of Culture, Management and Business, Mandalika University of Education. This design allows researchers to systematically describe the phenomena that occur as well as analyze the relationship between the variables involved in the development of technology-based ESP materials. This study focused on 6th semester students who were taking ESP courses. The sample of this study was selected using purposive sampling technique, which is by selecting students who have gained experience in ESP learning and using technology in their learning process. A total of 25 students were selected as respondents representing the group of students who participated in ESP learning at the university.

The main instrument used to collect data was a questionnaire consisting of 30 questions divided into several main categories. The questionnaire aimed to measure the utilization of technology in ESP learning, students' perception of technology, as well as their experience in using technology in learning. Respondents were asked to rate each statement based on their level of agreement using a 5-point Likert scale, ranging from "strongly agree" to "strongly disagree". This questionnaire has gone through validity and reliability tests to ensure that the instrument can measure what is intended with high consistency. In addition, this study also involved semi-structured interviews with 5 students and 3 lecturers teaching ESP courses, which aimed to gain a deeper understanding of their experiences in using technology in ESP teaching. These interviews are expected to explore the challenges and expectations related to the development of technology-based ESP materials.

The data collection process began with the preparation stage, where the research instruments were prepared and customized. The questionnaires were then distributed to 25 students online and offline, with one week given for completion. After questionnaire collection, interviews were conducted to obtain additional information from students and lecturers. In addition, researchers also conducted observations of the interaction between students and technology-based materials used in ESP learning. Observations were conducted for four meetings to monitor the use of technology in learning activities. The data collected from the questionnaire will be analyzed using descriptive statistics to calculate the frequency and percentage of each statement, in order to identify common patterns that emerge from students' responses. The researcher will also use inferential analysis to identify the relationship between the use of technology and students' learning motivation in the ESP course.

The interview and observation data will be analyzed using a thematic analysis approach, where the researcher will identify the main themes from the interview transcripts and observation notes to explore the factors that influence the effective use of technology in the development of ESP materials. The analysis also aims to understand the social and cultural contexts that may influence the acceptance of technology by students and lecturers, and how technology contributes to learning outcomes. This study will follow the ethical principles of research, where all participants will be informed of the purpose of the study and the procedures undertaken. Participation in this study is voluntary, and respondents can choose to discontinue participation at any time without any negative consequences. The identity of respondents will be kept confidential, and all data collected will be treated with the utmost care to ensure privacy and confidentiality of information.

RESEARCH RESULTS AND DISCUSSION

The results of data collection through questionnaires, interviews, and observations show that the use of technology in learning *English for Specific Purposes* (ESP) in the English Language Education Study Program at Mandalika University of Education has a significant influence on student involvement in learning materials . Based on questionnaire data completed by 25 students, the majority of students (80%) use online learning platforms such as Google Classroom and Moodle to access materials, discuss, and do assignments.

Only a few students do not utilize these platforms optimally, which is about 20% of the total respondents.

In addition, the use of multimedia-based materials, such as learning videos and podcasts, is also very popular among students. 70% of the students (17 people) reported that they find it easier to understand ESP materials through learning videos, especially those related to technical and specific topics. Another 65% of students (16 people) also revealed that they rely on podcasts or audio materials to delve deeper into topics in ESP.

However, despite the high use of technology, the main challenge arises from the limited technological skills possessed by some students. Around 40% of students (10 people) revealed that they found it difficult to utilize more complex learning applications, such as interactive simulation platforms. Access to adequate devices is also an obstacle, as around 30% of students (7 people) experienced difficulties with hardware limitations or unstable internet connections.

Lecturers teaching ESP courses also recognize that although technology can increase student engagement, integrating technology in ESP learning still faces some obstacles. From the interviews with 3 lecturers, 60% (2 lecturers) stated that they need further training in the use of technology, especially to develop multimedia-based learning materials and online platforms.

The following is detailed data regarding the use of technology in ESP learning based on the results of questionnaires filled out by 25 students:

Type of Technology Used	Number of Users (People)	Percentage of Usage (%)
Online Learning Platform (Google Classroom, Moodle)	20 people	80%
Learning Video	17 people	70%
Podcasts and Learning Audio	16 people	65%
Interactive Learning Application (Simulation)	10 people	40%
Artificial Intelligence (AI)-based Learning Application	7 people	30%

From the table above, it can be seen that online learning platforms such as Google Classroom and Moodle are the most widely used technologies by students, with 80% of students accessing learning materials through these platforms. This indicates that students are quite familiar and accustomed to the use of online learning platforms, which allow them to access materials, submit assignments, and discuss with lecturers and classmates more flexibly.

The use of learning videos and podcasts is also quite high, with 70% and 65% of students using them respectively. This shows that students strongly support multimedia-based learning materials, which allow them to more easily understand the concepts conveyed in ESP, especially when it comes to topics that require visual illustrations or detailed explanations.

However, the use of interactive simulation-based applications and artificial intelligence (AI) is still limited. Only 40% of students use interactive simulation applications, and 30% of students utilize AI-based applications. This may be due to limitations in device access or students' inability to operate these tools effectively. As stated by Richard (2001: 45), integrating technology in education requires adequate training for students to optimize its use.

These limitations in device accessibility and technology skills reflect the challenges that still exist in the utilization of technology in higher education, especially in developing countries. Lecturers also feel that although technology offers great potential in increasing student engagement, they need further training to maximize the use of technology in the development of ESP materials. This is in line with the opinion of [5] , who revealed that

lecturers need to get sufficient training to support the use of technology in teaching.

Overall, the results of this study show that technology plays an important role in ESP learning, but effective use of technology requires improvement in terms of lecturer training and improvement of technological infrastructure in higher education institutions. In order for technology to be optimally utilized in the development of ESP materials, educational institutions need to pay serious attention to these two aspects.

CONCLUSIONS

Based on the results of research conducted on 6th semester students of English Education Study Program of Mandalika Education University, it can be concluded that technology has a significant role in the development of English for Specific Purposes (ESP) learning materials. The use of online learning platforms such as Google Classroom and Moodle, as well as multimedia-based learning materials such as videos and podcasts, proved effective in increasing students' engagement and understanding of ESP materials. This is in line with the opinion of Cahyono and [1] who state that technology allows the delivery of more varied and interactive materials, which is very important in language teaching for specific purposes, especially in academic or professional contexts.

However, while the use of technology has shown positive results, challenges remain, especially in terms of the limited accessibility of devices and the technical skills possessed by some students. As many as 40% of students reported difficulties in utilizing more complex applications, such as interactive simulation platforms. This underscores the importance of more in-depth training for students in order to optimize the use of technology in learning. According to Richard (2001: 45), the success of technology integration in education is highly dependent on the readiness and skills of its users, both students and lecturers.

In addition, although most lecturers support the use of technology in ESP learning, they admit that they need further training, especially in the development of multimedia-based materials and online learning platforms. This is in line with what [5], who argue that the development of technology-based ESP materials requires the active involvement of lecturers who have skills in utilizing existing technological tools.

Overall, technology has great potential in improving the quality of ESP learning. Therefore, in order to maximize the benefits of technology in the development of ESP materials, educational institutions need to provide stronger support both in terms of training for lecturers and improving technological infrastructure. Thus, technology can be optimally integrated in ESP teaching to create a more effective learning experience that is relevant to the needs of the professional world.

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