The Role of Learning Technology in Encouraging Student Creativity in Foreign Language Learning in Higher Education

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ABSTRACT

Background. This research analyzes the role of Learning Technology in stimulating student creativity in foreign language learning in higher education. The research background highlights the importance of integrating learning technology in the context of higher education, especially in developing student creativity in foreign language learning. With the rapid development of Learning Technology, this research tries to measure and analyze its impact on student creativity.

Purpose. The aim of this research is to identify the extent to which Learning Technology influences the level of student creativity, assess preferences and trends in technology use, and provide recommendations for increasing the effectiveness of technology use in supporting foreign language learning. With a quantitative approach through a survey model, this research combines a comprehensive research design to gain in-depth insights.

Method. The research methodology includes creating a questionnaire that reflects key aspects, such as the type of technology used, frequency of use, and perceptions of creativity. Respondents were selected from university students who were actively taking foreign language courses, especially Arabic and English. Distribution of the questionnaire was carried out via Google Forms and WhatsApp groups, ensuring efficient participation.

Results. Data analysis using the Miles and Huberman model allows for an in-depth interpretation of the relationship between the use of Learning Technology and the level of student creativity. The research results highlight students' positive views on the impact of creativity generated by the use of learning technology, especially in collaboration and developing speaking and writing skills.

Conclusion. This research provides a solid foundation for understanding the role of Learning Technology in shaping students' foreign language learning experiences. These conclusions provide valuable information for higher education institutions and policy makers to continue to improve the integration of learning technology, create an environment that supports creativity, and enrich the foreign language learning process in the future.

KEYWORDS

INTRODUCTION

Higher education, as the main pillar for the formation of the next generation, is facing significant transformation

dynamics in this era (Schofer et al., 2021). Technological developments play a central role in this change, introducing new paradigms in the learning process. In particular, foreign language learning in higher education, such as Arabic and English, is an area experiencing substantial change (Oksana Andriivna et al., 2020). In this context, it is important to evaluate the impact of the use of Learning Technology on student creativity, considering the great potential of technology to change the way students interact with learning material.

The creativity aspect in foreign language learning is the main basis for developing student knowledge and skills (Rus, 2020). Creativity is not only limited to the production of innovative work, but also involves the ability to think critically, connect complex concepts, and find unique solutions (Fazey et al., 2020). Although Learning Technology offers greater open access to information and resources, the essential question arises to what extent this technology really supports the development of student creativity, especially in foreign language learning which requires in-depth understanding and application of creativity in different contexts.

Dominant trends in the use of translator apps, online learning platforms and other digital resources marks the evolution of foreign language learning (Buendgens-Kosten, 2020). However, despite the sophistication of this technology, concerns arise about whether intensive use of technology can actually become an obstacle to student creativity. How technology shapes students' mindsets in assimilating and creating in a foreign language context is a critical question that needs to be answered (Dwivedi et al., 2023). Therefore, this research appears as a proactive step to explore and deepen the role of Learning Technology in encouraging student creativity in the world of higher education.

In this information era, the sophistication of Learning Technology is both a blessing and a curse (Sharma et al., 2022) . While translation apps and online learning platforms can ease access to information, ethical questions and psychological impacts need to be taken into account. Are there students whose dependence on technology is detrimental to their creativity? Does learning technology really support students to become creative and critical thinkers? These are the questions that motivated this research.

To overcome this challenge, the expected solution is to initiate a learning model that is balanced between technology and conventional approaches (Al-Kumaim et al., 2021). It is important to find strategies that take advantage of the advantages of technology without sacrificing student creativity (Fisk et al., 2018). Improvements in curriculum design and teaching methods need to be integrated to ensure that Learning Technology is not just a tool, but also an enabler of creativity.

Previous research from this research detailed the progress of digital technology in language learning, recognizing its effectiveness. With rapid development, technology is increasingly diverse and widely used, prompting the need for a summary of the latest developments. This research reviewed 57 articles from 10 leading journals in the field of language learning technology, identifying five main types of technology and four important goals, namely promoting practice, delivering instructional content, facilitating interaction, and restructuring teaching approaches. The integration of this technology in language learning shows an overall positive impact (Yan et al., 2022).

This second research responds to the finding that there is a misalignment between creativity and education. Additionally, research rarely describes how instructors in higher education leverage mobile devices to encourage student creativity. To gain a deeper understanding of teaching practices, college instructors were interviewed, and 24 courses were analyzed using the constitutive elements of integrated course design: teaching objectives, learning activities, assessment, teacher-

student interactions, and mobile device integration. The results indicated that instructors did not explicitly design for student creativity. However, in-depth analysis applying the Creativity Facets approach illustrates three types of implicitly integrated creativity that enhance meaningful learning with mobile technology. The three types of design are (a) Related Place Design, (b) Connected Communication Design, and (c) Process Design (Jahnke & Liebscher, 2020).

This third previous study explored the role of mobile technology in learning English as a foreign language. Conducted through a literature review of mobile-based foreign English studies that were reviewed between 2015 and April 2019. From the 16 journal studies identified, the research results show that mobile learning has a crucial role in increasing cognitive capacity, learning motivation, autonomy and trust. learner self. While effective overall, research details the need for careful planning and implementation of mobile learning, according to student needs, in authentic learning environments (Kacetl & Klímová, 2019).

The conclusions of three previous studies show that learning technology, especially in the context of mobile devices, plays a significant role in improving language learning. These findings support the aim of this research which is to measure the impact of using Learning Technology on student creativity in learning foreign languages in higher education. Recommendations from previous research, such as related place-based design and the integration of implicit creativity, provide valuable guidance for increasing the effectiveness of the use of technology in supporting foreign language learning.

This research is expected to provide a more holistic and in-depth view of the impact of the integration of Learning Technology on student creativity in foreign language learning. It is hoped that the results of this research can provide a basis for developing more effective educational policies and encourage positive changes in learning approaches in tertiary institutions.

This research aims to measure and analyze the impact of the use of Learning Technology on student creativity in foreign language learning in tertiary institutions, by using quantitative approach through a survey model. The specific objectives are to identify the extent to which learning technology influences student creativity, assess preferences and trends in technology use, and provide recommendations for increasing the effectiveness of technology use in supporting foreign language learning.

RESEARCH METHODOLOGY

This research aims to investigate the role of Learning Technology in encouraging student creativity in the context of foreign language learning in higher education. Using a quantitative approach and survey methods, this research was designed to collect data systematically and identify the extent to which Learning Technology influences the level of student creativity. A quantitative research design was chosen to provide a more objective and measurable picture of the relationship between the use of Learning Technology and student creativity. The survey method will be the main instrument for collecting data from students. The questionnaire will be designed taking into account a conceptual framework that includes key aspects such as the use of technology, level of creativity, and student perceptions of the impact of Learning Technology.

The research procedure will begin with the questionnaire creation stage (Guest et al., 2020). This questionnaire will be developed carefully by considering relevant and valid questions. Aspects such as the type of technology used, frequency of use, and perceptions of creativity in the context of foreign language learning will be the main focus of the questionnaire. Respondents for this research will be selected from university students, especially those who are actively taking foreign language courses, especially Arabic and English. Student participation in this research will help describe their

direct experience with Learning Technology and the extent to which it influences the level of creativity in the language learning context.

To distribute the questionnaire, the research will utilize digital platforms, specifically Google Forms, which allows the creation of questionnaires online. The questionnaire will be sent to respondents via a WhatsApp group consisting of language students at universities. This step is not only efficient in the data collection process, but also facilitates easier participation for students. Data analysis will be carried out using the Miles and Huberman model (Batubara et al., 2021). This model involves the process of collecting, organizing, and interpreting quantitative data to understand patterns and relationships that may emerge (Collingridge & Gantt, 2019). Data collected from the questionnaire will be analyzed statistically to determine the correlation between the use of Learning Technology and the level of student creativity.

During this research, research ethics will be the main concern. Student participation will be voluntary and anonymous, ensuring the confidentiality of the data generated. This research will adhere to the principles of research ethics, including participant consent, fairness, and research integrity. With a comprehensive research design, use of survey methods, and careful data analysis, it is hoped that this research can provide in-depth insight into the role of Learning Technology in encouraging student creativity in foreign language learning in higher education.

RESULT AND DISCUSSION
Use of Learning Technology

The use of Learning Technology, as an integral concept in the realm of education, marks a shift towards a learning approach that holistically utilizes various aspects of technology to increase learning effectiveness (Bozkurt, 2020). Within the framework of foreign language learning in higher education, this paradigm has a significant impact by involving various technological solutions, such as translation applications, online learning platforms, learning videos, and other latest innovations (Saito & Plonsky, 2019).

Learning technology is not just a tool, but a transformation that permeates everything educational aspect (Miño-Puigcercós et al., 2018). Utilizing advanced hardware and software, this technology supports student creativity by providing access to a wide range of educational resources (Asad et al., 2021). Through the interaction and collaboration facilitated by online platforms, students can develop language skills in a more interactive and engaging way.

However, the user experience is not always without challenges. Some students may face difficulties, such as an unstable internet connection or navigation challenges within the learning platform (Katz et al., 2021). This challenge underscores the need to develop strategies and policies that ensure fair and equitable access to learning technology.

It is important to recognize that the use of learning technology is not just about technology adoption, but rather how the technology changes the dynamics of learning (Priyono et al., 2020). The integration of technology in curriculum design and teaching methods creates a more dynamic learning experience and adapts to the unique needs of each student (Shehata et al., 2020). It's not just about conveying information, but also stimulating critical thinking, creativity, and active participation.

By combining technological innovation with strong educational principles, the use of learning technology forms the foundation for creating a learning environment that is inclusive, adaptive, and ready to meet demands future (Marienko et al., 2020). In this digital era, where rapid change is the norm, learning technology is the key to preparing students to face global challenges with relevant and up-to-date skills (Williamson et al., 2020).

After distributing a questionnaire to 40 language students (Arabic and English are dominant) who became a respondent, regarding the use of learning technology by first asking, How often do you use technology (for example, applications, online platforms) in learning foreign languages in college? With the following answer choices: Very Rarely, Rarely, Sometimes, Often and Very Often. With the following answer results:
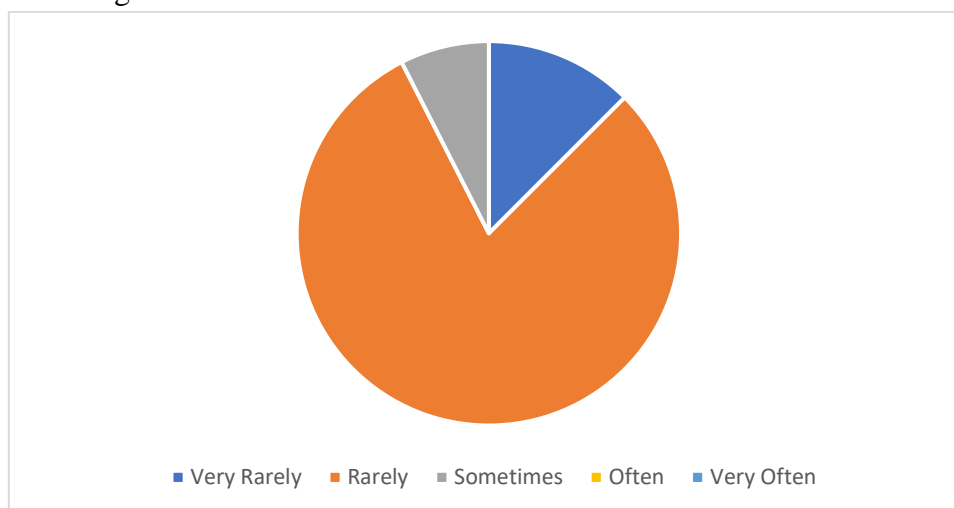

Figure 1. How often do you use technology (for example, applications, online platforms) in learning foreign languages in college?

After distributing questionnaires to 40 language students (Arabic and English being dominant), the analysis results showed that there was a positive trend regarding the use of learning technology in foreign language learning in higher education. The first question relating to how often students use learning technology yielded data that reflected a fairly high adoption rate. Of the total respondents, 80% of students stated that they used learning technology frequently, while 12.5% indicated use very often. Only a small number, namely 7.5% of respondents, gave a neutral answer to the use of technology in the context of foreign language learning.

This pattern shows that learning technology has become an important aspect of the language learning experience of language students. The fact that the majority of students use learning technology actively illustrates the need and enthusiasm for technological solutions to support language learning. This could be an indication that students see added value in using technology, such as easy access to learning resources, interactivity, and flexibility of learning.

However, the data shows that a small number of students feel neutral regarding the use of technology, indicating that there is variation in perceptions towards the role of technology in language learning. Therefore, going into further detail through subsequent questions can provide a deeper understanding of the concrete impact of learning technology on student creativity and the potential challenges they may face. This further analysis can provide a more comprehensive view to inform the development of more effective and inclusive learning strategies in higher education settings.

Next question, What type of learning technology do you use most often in foreign language learning? Translator Application, Online Learning Platform and Learning Video with the following answer results:
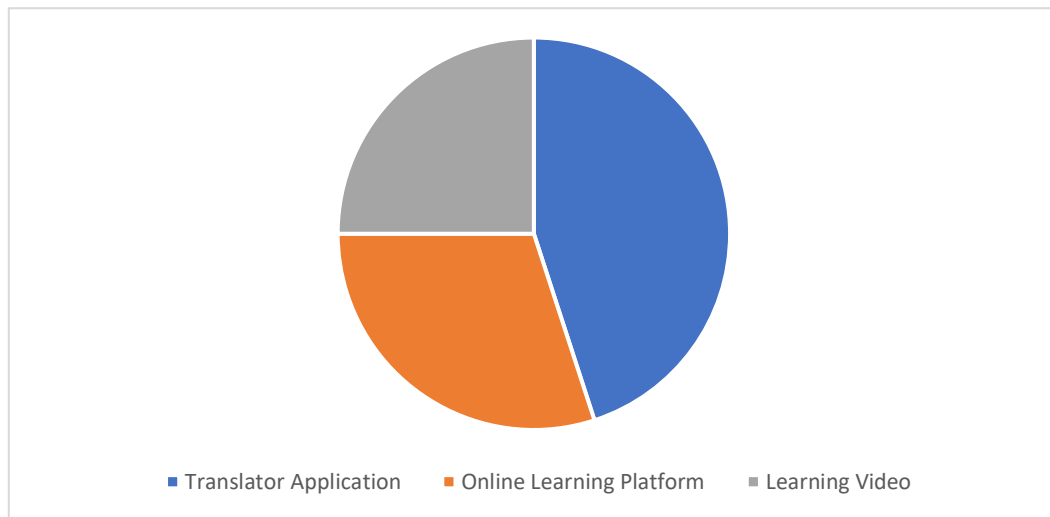
Figure 2. What type of learning technology do you use most often in foreign language learning?

Questions regarding the types of learning technology most frequently used by students in foreign language learning provide a more detailed picture of technology use preferences and habits. Of the total respondents, 45% chose translator apps, 30% chose online learning platforms, and 25% chose learning videos as the most frequently used type of technology.

Translator apps emerged as the top choice with the majority of respondents choosing them, indicating that the ability to perform live translations may be a top priority in foreign language learning. Meanwhile, online learning platforms and learning videos remain significant components, indicating that interactive and visual aspects of learning are also considered important.

These results provide valuable insight into students' needs and preferences regarding learning technology. Further integration of translator applications, development of interactive content on online learning platforms, and utilization of learning videos can be effective strategies to improve the quality and engagement in foreign language learning in higher education settings. Further analysis in the following questions can complete this picture with additional perspectives on the impact of learning technology on student creativity and the obstacles that may be encountered.

Next question, To what extent do you think the use of learning technology can increase student creativity in foreign language learning ? With the following answer options: Very Low, Low, Medium, High and Very High. With the following answer results:
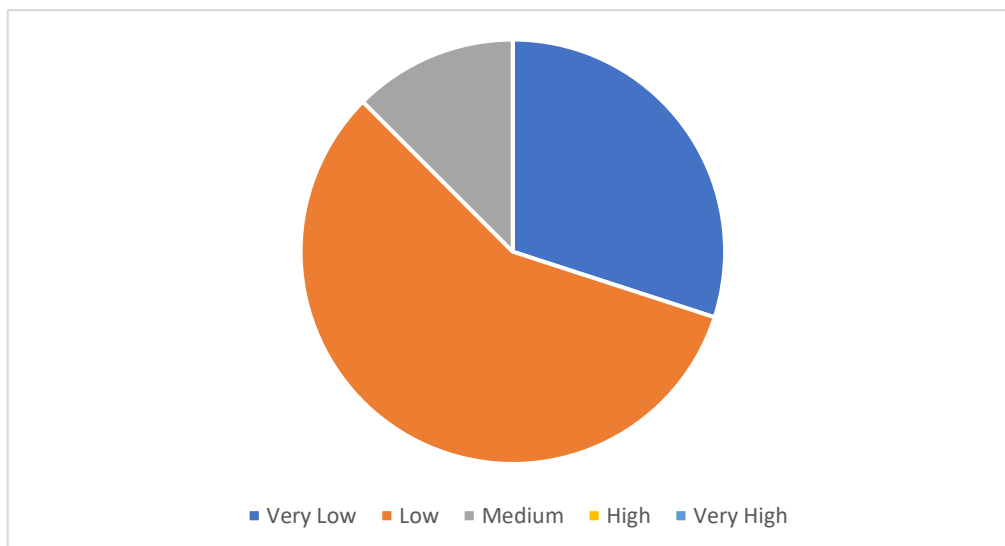
Figure 3. To what extent do you think the use of learning technology can increase student creativity in foreign language learning ?

The question regarding the extent to which the use of learning technology can increase student creativity in learning foreign languages provides a positive picture of the role of technology in inspiring creativity. Of the total respondents, 87.5% of students stated that the use of learning technology had a significant positive impact, with 30% choosing the 'very high' option and 57.5% choosing the 'high' option.

The majority of answers indicated that students saw learning technology as as a tool that facilitates creative expression and development of ideas in foreign language learning. Meanwhile, only 12.5% of students expressed a neutral attitude, providing room for further understanding regarding the variability of views and potential differences in experiences of using technology in language learning contexts.

This analysis highlights that the use of learning technology is generally considered positive by students, encourage their creativity in foreign language learning. Furthermore, the next question can provide deeper insight into how the technology specifically supports students' creative activities and whether there are certain challenges that may need to be overcome to increase its effectiveness.

The next question, How does learning technology support your creative activities in foreign language learning? With the following answer options: Provide access to diverse learning resources and collaboration with fellow students, Facilitate cultural exploration through digital media and Assist in the development of speaking and writing skills. With the following answer results:
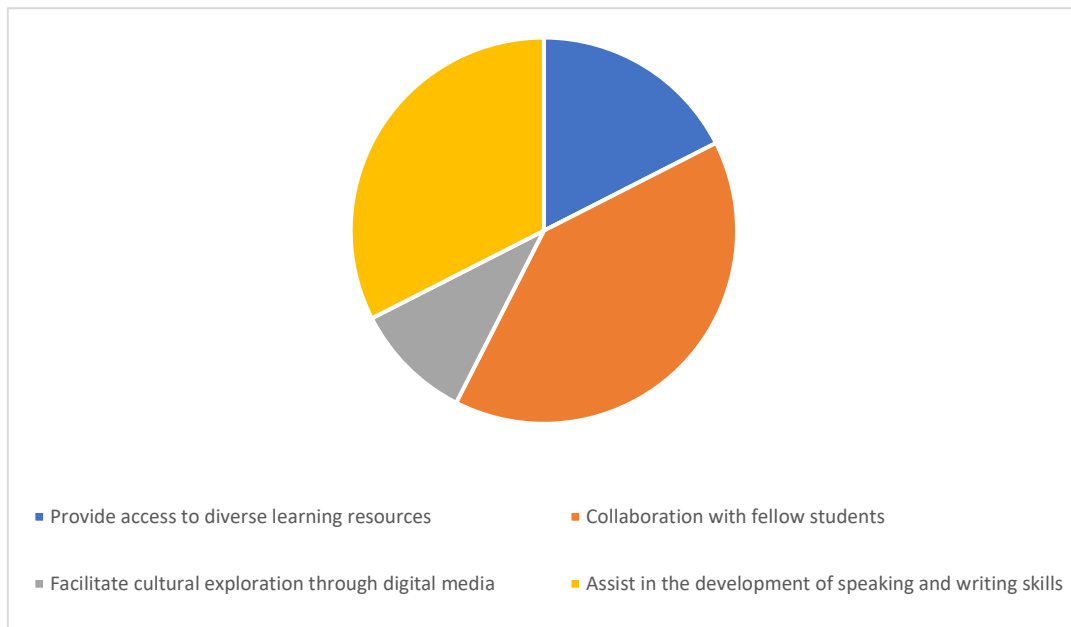
Figure 4. How does learning technology support your creative activities in foreign language learning?

The question of how learning technology supports students' creative activities in foreign language learning provides a deeper understanding of the role of technology in facilitating creativity. Of the total respondents, the 'Collaborate with Fellow Students' option dominated with 40%, indicating that students see technology as a means to collaborate and interact with others.

In addition, the 'Helps in the Development of Speaking and Writing Skills' option also reached a significant percentage, namely 32.5%, indicating that technology contributes to aspects of language skills development. Meanwhile, the option 'Providing Access to Diverse Learning Resources' reached 17.5%, and 'Facilitating Cultural Exploration through Digital Media' at 10%.

These results reflect the diversity of the role of learning technology in helping students develop their creativity. Technology provides access to a variety of learning resources, supports collaboration between students, facilitates cultural exploration through digital media, and assists in the development of speaking and writing skills. In conclusion, learning technology is not only a tool, but also a catalyst to inspire and increase student creativity in learning foreign languages.

Impact of Student Creativity

The impact of student creativity in higher education creates a solid foundation for intellectual, social, and professional development (Williamson et al., 2020). Creativity, as the ability to generate new ideas and innovative solutions, plays a key role in preparing students to face the complex challenges of the future (Tang et al., 2020). In the context of learning in higher education, student creativity is not only about producing works of art or innovative products, but also about the ability to think critically, connect different ideas, and find new solutions to complex problems (Rahmawati et al., 2019).

One of the impacts The main aspect of student creativity is the ability to adapt. Students who have developed creativity tend to be more open to change, better able to adapt to changing environments, and better prepared to face new challenges (Giesenbauer & Müller-Christ, 2020). This is important in a world that continues to develop and change rapidly, where students need to have the ability to adapt and solve problems that have never been faced before.

The impact of creativity can also be seen in improving the quality of learning. Students who can use their creativity in the learning process tend to have a deeper level of understanding and are more involved in the learning material. They can find unique approaches to understand difficult concepts and better integrate their knowledge. Creativity can also stimulate curiosity, motivation and intrinsic interest in learning, forming a more meaningful learning experience (Ma et al., 2023).

In addition, student creativity can be a driver of innovation on campus and in society (Bodolica & Spraggon, 2021). Students who are empowered to apply their creativity can create innovative projects or solutions that have a positive impact on the campus environment and more broadly, on the surrounding community. By providing space for creative expression, universities can become laboratories for new ideas and solutions that can bring about positive change.

In a career context, student creativity can be a valuable asset (Papoutsi et al., 2019). Higher education that facilitates the development of creativity can help students hone skills that are highly sought after in the job market, such as problem solving, innovative thinking, and effective communication (McGunagle & Zizka, 2020). With these abilities, students can more successfully face professional challenges and make meaningful contributions to their workplace.

However, to achieve optimal impact, it is important for higher education to create an environment that supports the development of creativity (Al-Kumaim et al., 2021). This involves a curriculum that promotes creative thinking, a learning approach that encourages the exploration of ideas, and a campus culture that celebrates and supports creative expression. By creating an educational ecosystem that encourages creativity, universities can have a significant impact on students' personal and professional development, preparing them to face the world with a broader vision and deeper skills (Shi et al., 2020).

Related to the above, after we conducted a survey with the question, So far where you agree with the following statement: 'The use of learning technology can increase student creativity in developing foreign language skills.' With the following answer options: Strongly agree, agree, neutral, disagree and strongly disagree. With the following answer results:
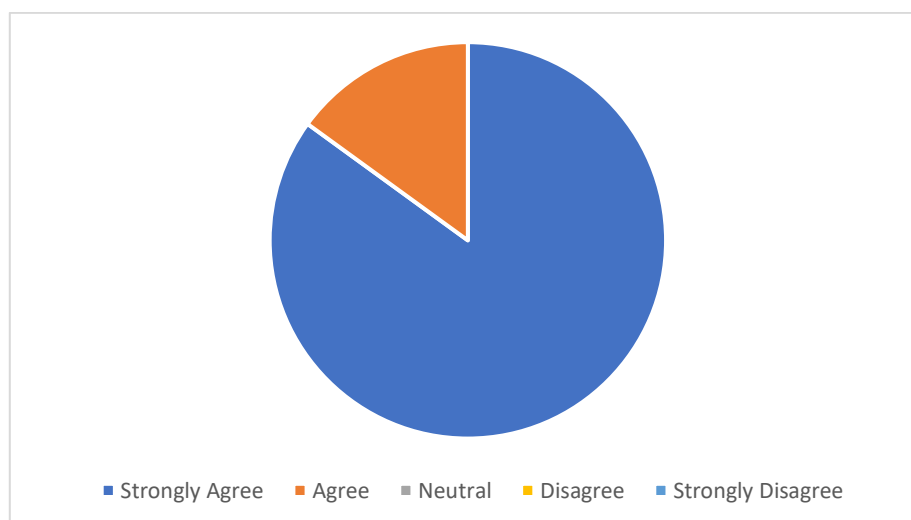

Figure 5. After we conducted a survey with the question, So far where you agree with the following statement: 'The use of learning technology can increase student creativity in developing foreign language skills?

The survey results showed that the majority of respondents, 85%, agreed or strongly agreed with the statement 'The use of learning technology can increase student creativity in developing

foreign language skills.' With 34 people (85%) strongly agreeing and 6 people (15%) agreeing, these results provide a positive picture of students' perceptions of the role of learning technology in advancing their creativity in the context of foreign language learning.

From these results, it can be concluded that students see learning technology as an effective tool to stimulate creativity in developing foreign language skills. The use of technology, such as translation applications, online learning platforms, and instructional videos, appears to play an important role in providing students with access to diverse learning resources, facilitating collaboration, and assisting in the development of speaking and writing skills.

Thus, the results of this survey indicate positive consensus that the integration of learning technology can make a positive contribution to the development of student creativity in the context of foreign language learning in higher education environments. Further analysis of specific aspects of technology use and the way technology influences student creativity can provide more detailed insights for the development of more effective learning strategies in the future.

Next question, To what extent do you feel the use of learning technology has had a positive impact on the results of learning a foreign language? With the following answer options: very high, high, medium, low and very low. With the following answer results:
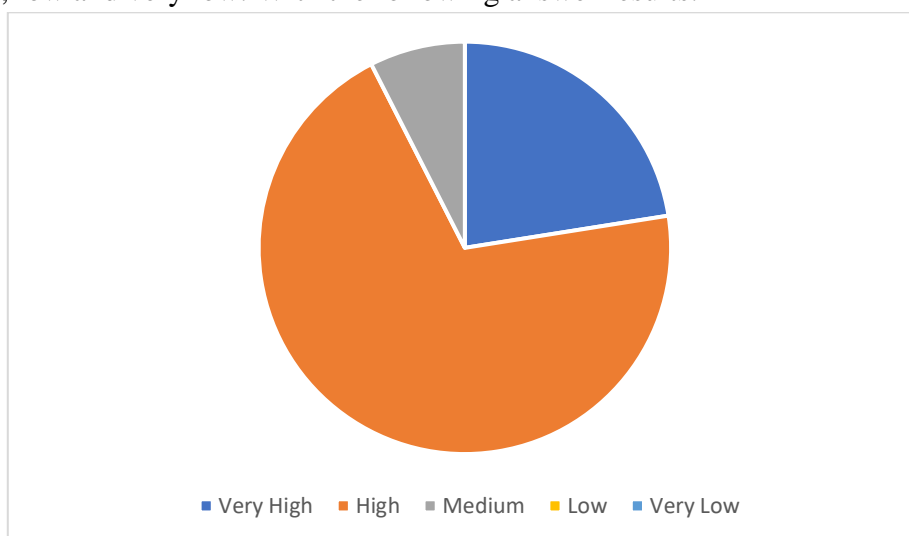

Figure 6. To what extent do you feel the use of learning technology has had a positive impact on the results of learning a foreign language?

Questions related to the extent to which the use of learning technology has a positive impact on foreign language learning outcomes produce a picture that strengthens students' positive views on the role of technology in the learning process. As many as 92.5% of respondents stated that the use of learning technology had a positive impact, with 22.5% stating a very high impact and 70% stating a high impact.

From these results, it can be interpreted that students see learning technology as an important factor that contributes to results their foreign language learning. Respondents who perceive very high impact may experience significant improvements in their learning attainment through the use of technology, while those who perceive high impact may experience positive changes that remain significant. Although a small number of respondents (7.5%) expressed a neutral attitude, it could be a focus to better understand their perspectives and potential improvements or adjustments in the implementation of learning technology.

With these results, it appears that the implementation of learning technology in foreign language learning environments in higher education assessed positively by the majority of students.

Further analysis of the specific elements that support this positive view may provide deeper insights for the development of better learning strategies in the future.

CONCLUSION

This research highlights the views of students majoring in languages, especially Arabic and English, regarding the Use of Learning Technology and the Impact of Student Creativity in learning foreign languages in higher education. The majority of respondents indicated a high level of adoption of learning technology, with translator applications being the most frequently used tools. The survey results also reflect students' positive perceptions of the creative impact generated by the use of learning technology.

In the context of the Use of Learning Technology, the findings show that students rely on various types of technology, including translator applications, online learning platforms, and learning videos. Meanwhile, from the aspect of the Impact of Student Creativity, the results show that students see learning technology as the main support in stimulating their creativity, especially in collaboration with fellow students and developing speaking and writing skills

Overall, this research creates a strong basis for understanding how Learning technology plays a key role in shaping students' foreign language learning experiences. These conclusions provide valuable information for higher education institutions and policy makers to continue to improve the integration of learning technology, create an environment that supports creativity, and enrich the foreign language learning process in the future.

AUTHORS' CONTRIBUTION

Look this example below:
Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.
Author 3: Data curation; Investigation.
Author 4: Formal analysis; Methodology; Writing - original draft.

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