International Journal of Law and Policy | Volume: 3, Issue: 7
2025

The Impact of Technology Integration on Language Learning: Examining Learner Motivation, Engagement, and Outcome

Adeena Yaqoob*
University of Management and Technology

Maleeha Nawab*
Bahcesehir University

Sadia Sattar*
Leads University Lahore

Abstract

The integration of technology in language learning has become a vital component of modern education, enhancing both classroom instruction and independent learning. This study explores how technological tools influence learner motivation, engagement, and language acquisition outcomes. Despite the widespread adoption of digital tools, limited research investigates why students increasingly rely on them. Using semi-structured interviews and guided by Self-Determination Theory, this research examines the role of flexible applications, online platforms, and virtual simulations in language learning. Data triangulation provided a deeper understanding of learner experiences. Findings indicate that students benefit from increased one-on-one interaction with instructors and real-time feedback, which improved their motivation and core language skills. Simulations also heightened engagement and attention spans. Overall, the study highlights students' shared perceptions of improved learning support and suggests practical strategies for optimizing language education through innovative technology, addressing key factors such as accessibility, learner autonomy, and technological adaptability.

Keywords: Technology Integration, Self-Determination Theory, Qualitative, SLA, Interviews

APA Citation:

Yaqoob, A., Nawab, M., & Sattar, S. (2025). The Impact of Technology Integration on Language Learning: Examining Learner Motivation, Engagement, and Outcome. *International Journal of Law and Policy, 3* (7), 28-51. https://doi.org/10.59022/ijlp.347

I. Introduction

The use of technology in language instruction has spread quickly throughout the world's educational systems. New options that challenge self-directed language learning and conventional classroom-based language education methods have emerged as these platforms and digital technologies continue to develop. In the subject of language education, understanding how technology affects language acquisition processes has become a key area of research and practical application.

Since English has become a universal language, the most significant area where technology has advanced significantly is in the teaching of English language proficiency. Teachers and educators continue to search for more authentic and promising methods to enhance language acquisition, particularly for second language learners. When taught by a teacher whose second language is English, native English speakers encounter some significant challenges in a virtual learning environment. Similar challenges may arise for the teacher in bridging the gap between student involvement and language proficiency. Even if there are some effective technological tools that may be used in the classroom, there may still be certain difficulties that both teachers and students may encounter.

It is important to remember that educators and instructors have been paying close attention to CALL and other virtual platforms in an effort to enhance language learning. Virtual simulations have made it simpler for students to communicate with facilitators and comprehend challenging ideas. This study examines the essential components of language learning by analyzing theoretical frameworks and practical research. This study offers a thorough literature analysis that addresses the connection between technology and language learning. Additionally, it talks about the possible drawbacks and difficulties associated with technology-enhanced language acquisition. It focuses on issues related to accessibility, equity, and the quality of digital resources. Significant new information from this study can also help researchers, educators, and legislators who want to maximize the use of technology in language instruction.

In recent years, there has been a greater incorporation of technology in the classroom. Digital technologies, multimedia, and online platforms have all been widely used to enhance instruction and learning. Numerous researches on the effects of technology on language acquisition have been conducted, and as a result, student input on the issues has been gathered. The effectiveness of self-directed teaching approaches has been reevaluated as a result of this technological development.

The impact of incorporating information technology into instruction is the main topic of the study by Asare & Alhassan (2023). The study emphasizes the advantages of technology use for learning English. It offers perspectives from a range of scholars,

instructors, and legislators. This information-integrated approach has increased student engagement, motivation, and participation while encouraging critical thinking and self-directed learning. Digital tools, interactive multimedia, online resources, and computer-assisted language learning (CALL) applications have emerged as useful educational tools that have aided language acquisition and enhanced communicative performance and competency. Additionally, technology-mediated systems have evolved to support a range of viewpoints, inclinations, and learning styles, meeting the needs of every student and promoting inclusive practices in educational establishments.

Another study was conducted by Quamer & Sahabat (2024) which states that integrating technology into the classroom especially in English classes including mobile applications and CALL is a positive strategy. It encourages language acquisition, boosts motivation and involvement, supports learning objectives, and offers learning resources and cultural understanding chances. Nonetheless, certain difficulties were identified, including teacher preparation, resource access limitations, and technical problems. In order to determine the opinions, attitudes, and experiences of English language learners and educators regarding the use of technology in classrooms, this study used a qualitative and thematic methodology.

Similarly, Islam (2023) examines the possible benefits and challenges of using technology in ESL classes from the viewpoints of both teachers and students. Additionally, it highlights how the use of digital tools affects the effectiveness of ESL training in Bangladeshi high schools. This study's primary focus is on language acquisition and how students participate in identifying the results, including the framework, methods, advantages, and disadvantages. Both quantitative and qualitative approaches were applied to the data collection process. To determine the availability, accessibility, benefits, and drawbacks of using technology to teach and learn ESL, surveys and interviews were undertaken. From the viewpoint of the students, the issue of unequal access to technology was recognized. As for teachers' perspectives, more balance between technology-based teaching and traditional teaching is required.

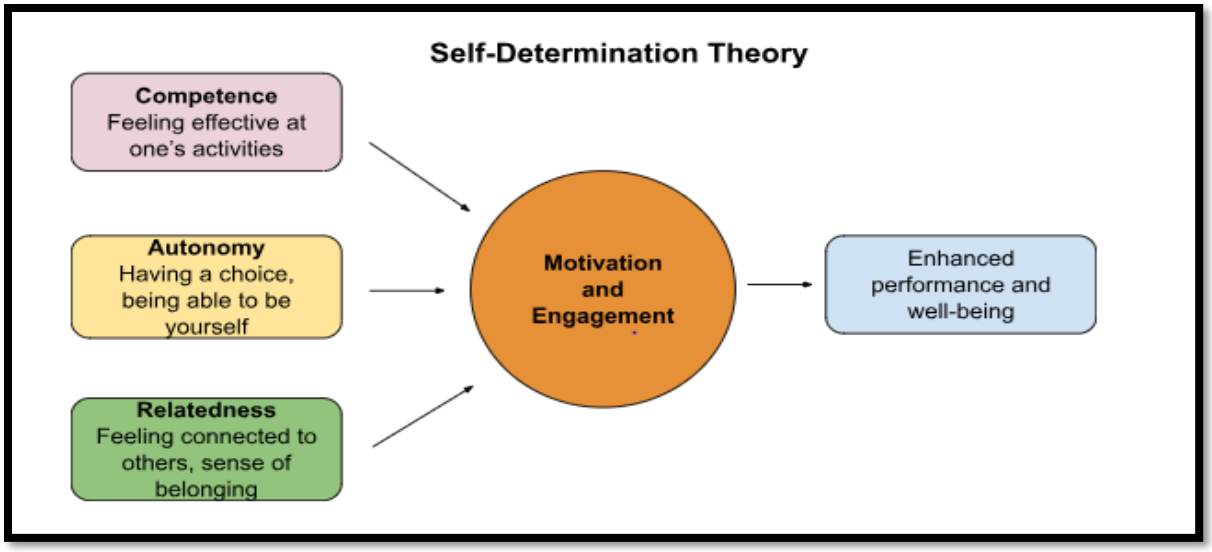
Francis (2017) studies how technology affects students' participation and motivation in classroom instruction. In order to assess the technological intervention, 348 students from an Urban Charter School were chosen for this study. Surveys were used to collect information on perception and motivation, classroom observations were made, and lesson plans were examined. The results of this study showed that some specific technological tools have positive impact on language learning whether it is used for pedagogical purpose or for students’ accomodation. It has been noted that using technology in the proper way can boost kids' performance and academic attainment.

Solikhah (2023) conducted a study regarding the impact of technology in teaching and learning English to students as their foreign language. It focuses on how technology has contributed to the growth of English as a foreign language and how different digital tools make language learning easier. It also emphasizes how technology and conventional teaching and learning methods may coexist in harmony and how integrating technology into the classroom can enhance student performance and communication. Bhat (2023) examined the impact of technology integration on student learning outcomes through comparative research. This study examines the possible drawbacks and advantages of integrating technology into educational systems and evaluates its impact on student involvement and academic performance by reviewing the body of existing research, case studies, and empirical data. This study also examined different approaches to technology integration and the impact on a range of demographics.

II. Methodology

This study utilized both quantitative and qualitative approaches to find out the students' perception about the integration of technology and how it impacts their motivation, proficiency, engagement, and learning outcomes. For qualitative data, Self-Determination Theory (McEown & Baldwin, 2023) was used to analyze the data which has been collected through questionnaires. It is a well-established theoretical framework which has been extensively used for the research in second language acquisition. As for the quantitative data, few interviews were conducted to gather the data regarding students' views on the use of technological tools in the educational settings.

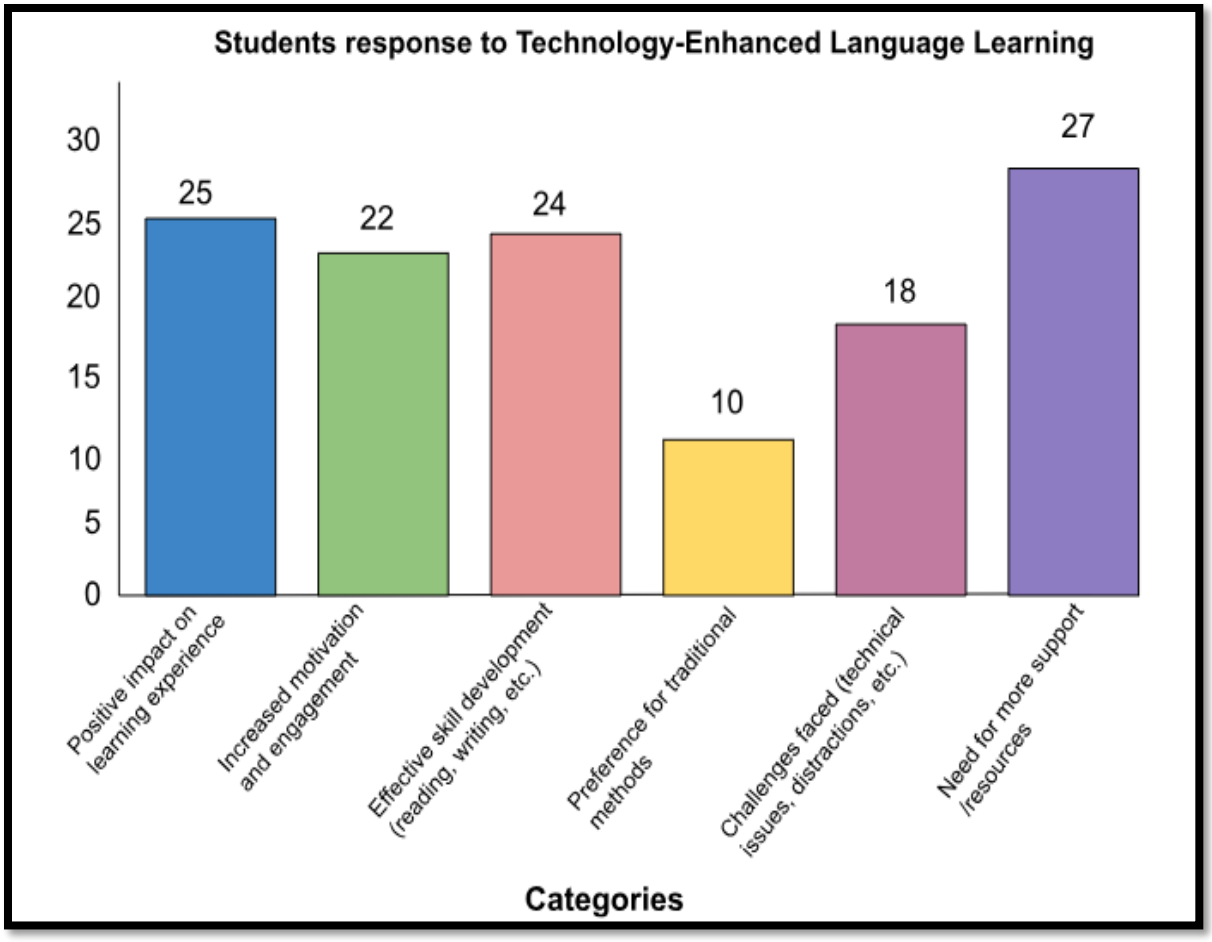
The theoretical framework of Self-Determination Theory (McEown & Baldwin, 2023) which has been used to determine learners' control over their learning strategies and pace and by providing constructive feedback and tracking their progress, they can further improve their weak points. Technology meets these needs by encouraging greater engagement and intrinsic motivation, which eventually improves learning outcomes and language proficiency. Self-Determination Theory deals with Competence, Autonomy, and Relatedness.



Data has been collected through questionnaires and interviews to analyze various technological tools used by the international students. For this study, 30 random international students were selected to collect the data and to examine the impact of technology integration on second language learning.

III. Results

There were 10 questions added in the questionnaire which mainly focused on exploring the impact of technology on language learning from the perspective of a learner. This qualitative data was analyzed through Nvivo to find out the patterns, clusters, and the charts. In addition to identifying advantages, difficulties, and distinctions from conventional approaches, the questions seek to comprehend how technological tools and platforms affect learning experiences, motivation, and engagement. It also looks for information on how students maintain their motivation, how technology specifically supports the development of skills (reading, writing, speaking, and listening), and what kinds of assistance students require from teachers and policymakers in order to get the most out of technology-enhanced language learning and the analysis of these question is as follows:



A. How has the integration of technology into your language learning environment affected your overall learning experience?

The integration of technology into language learning has had a big impact on students' experiences, according to Self-Determination Theory (SDT) (McEown & Baldwin, 2023). This theory highlights the importance of feeling in control, capable, and connected to others for good learning. The student's response shows that technology has made learning more accessible and convenient, which helps them feel more in control of their studies. They can find learning resources easily and study in ways that suit them best. However, the student also mentioned that technology can be distracting, which might make it harder to focus and feel competent. Despite this, they still find the benefits, like having lots of resources and flexible learning options, outweigh the negatives. This positive view suggests that technology supports the key needs of feeling in control, capable, and connected, leading to better motivation and learning.

B. What are the benefits you have observed?

According to Self-Determination Theory (SDT) (McEown & Baldwin, 2023), which emphasizes the importance of autonomy, competence, and relatedness in fostering intrinsic motivation and effective learning, the responses to the integration of technology in language learning reveal several key insights. The question "How has the integration of technology into your language learning environment affected your overall learning experience?" received responses highlighting both positive and negative effects. The positive aspects, such as having "almost all sorts of learning opportunities at a distance of a fingertip" and "a great deal of benefits," suggest that technology greatly enhances the learner's sense of autonomy. The ease of access to various learning tools and resources allows learners to take control of their learning journey, choosing when, how, and what to learn. This flexibility aligns well with SDT's emphasis on autonomy, as learners feel empowered to direct their own education.

However, the mention of "a lot of distractions" points to a potential threat to the sense of competence. Distractions can hinder focus and the ability to effectively engage with learning materials, which may undermine the learner's feeling of competence and progress. Despite this, the overall positive view implies that the benefits of technology such as diverse resources and flexible learning options are significant enough to outweigh these drawbacks, indicating that technology, on the whole, supports learners in feeling competent and successful.

When asked about the benefits observed from technology in language learning, the response listed "learning languages through different apps and online courses," "faster research," "better reach to data and information," and "easier access to different sorts of resources." These points further support the idea that technology enhances autonomy and competence. Using various apps and courses offers learners a wide range of options and methods, promoting a personalized and self-directed learning experience. Faster research and better access to data ensure that learners can efficiently find and utilize information, which boosts their competence by facilitating quick understanding and application of new knowledge. Easier access to different resources enriches the learning experience, making it more comprehensive and engaging, which can also enhance the sense of relatedness by connecting learners with broader learning communities and resources.

C. Describe the technological tools and platforms you have used for language learning (e.g., mobile apps, online courses, virtual simulations)?

Analyzing the responses regarding the technological tools and platforms used for language learning through the lens of Self-Determination Theory (SDT) (McEown & Baldwin, 2023), we can see how these tools support learners' autonomy, competence, and relatedness. Some responses mention tools like Teams, Board, and Zoom. These platforms

provide essential support for both learners and teachers. Tools like Teams and Zoom facilitate virtual classes and meetings, enhancing relatedness by enabling real-time interaction and collaboration. They also support autonomy by allowing learners to access learning materials and participate in classes from anywhere. The consistent support and best facilities these platforms offer also help boost learners' competence by providing a structured and efficient learning environment.

While other responses list JSTOR, ResearchGate, QuillBot, and Grammarly. JSTOR and ResearchGate are valuable for accessing scholarly articles and research papers, which can significantly enhance a learner's competence by providing high-quality information and resources. QuillBot and Grammarly are tools that assist with writing and grammar, directly supporting learners' competence by improving their language skills and confidence in writing. These tools also contribute to autonomy by enabling learners to independently refine and perfect their work.

D. How has the shift to online and technology-enhanced language learning impacted your motivation and engagement with the content?

Analyzing the impact of the shift to online and technology-enhanced language learning on motivation and engagement through the lens of Self-Determination Theory (SDT) (McEown & Baldwin, 2023), we can identify how these changes support the key psychological needs of autonomy, competence, and relatedness. The responses highlight that technology eliminates the need to physically search for content in libraries, reducing the physical strain and making resources readily accessible on-screen. This convenience significantly boosts the learner's autonomy by allowing them to access a wide range of learning materials at any time and place. The ease of access also enhances competence, as learners can efficiently find and use the necessary resources to improve their language skills.

Some other students directly state that it has become easier to stay motivated and engaged. This suggests that the technology-enhanced learning environment supports sustained engagement with the content. The flexibility and variety of resources available online cater to individual learning preferences, which further nurtures a sense of autonomy. Moreover, the continuous access to interactive and diverse learning tools helps maintain interest and motivation, reinforcing a sense of competence. The shift to online and technology-enhanced language learning positively impacts motivation and engagement by supporting the fundamental needs outlined in SDT. Autonomy is enhanced through easy access to resources, competence is boosted by the availability of efficient learning tools, and the engaging nature of technology helps sustain motivation. This results in a more effective and enjoyable learning experience.

E. What strategies do you use to stay motivated and focused when learning remotely or through digital platforms?

In navigating remote or digital learning environments, individuals employ various strategies to maintain motivation and focus, as highlighted through responses informed by Self-Determination Theory (SDT) (McEown & Baldwin, 2023). One approach involves taking scheduled breaks and ensuring mental rest, a tactic that supports autonomy by allowing learners to manage their study sessions independently. These breaks are essential for maintaining competence, as they prevent cognitive overload and promote clearer thinking, thereby enhancing learning effectiveness. Additionally, using simulations for note-taking illustrates another strategy that bolsters competence by engaging learners actively in the learning process. This method not only reinforces understanding but also provides a sense of autonomy by allowing learners to choose tools that best suit their learning style.

Another effective strategy mentioned involves taking small, enjoyable breaks between learning sessions. This practice supports autonomy by enabling learners to personalize their study routines with activities that they find enjoyable and relaxing. These breaks contribute to competence by rejuvenating the mind, making it easier to maintain focus and absorb new information during study periods. By integrating these strategies into their learning routines, individuals not only enhance their motivation but also sustain their engagement with digital learning platforms, fostering a positive and productive learning experience influenced by SDT principles.

F. In what ways has technology influenced the development of your language proficiency (e.g., reading, writing, speaking, listening)?

Analyzing the questions and responses through the framework of Self-Determination Theory (SDT) (McEown & Baldwin, 2023), which focuses on autonomy, competence, and relatedness in fostering intrinsic motivation and effective learning, provides insights into how technology impacts language proficiency and learning experiences. The response highlights the use of online reading through PDF files and Kindle as a beneficial learning experience. This utilization of digital platforms enhances autonomy by giving the learner control over what and when they read, catering to individual preferences and interests. It supports competence by providing access to a wide range of texts and materials, which helps in developing reading skills and deepening understanding of language. The ability to write assignments and papers online, with the convenience of editing tools, exemplifies autonomy as the learner can independently manage and refine their writing. The ease of correcting errors fosters competence by allowing for immediate feedback and improvement in writing skills. Additionally,

participating in online lectures and classes improves both listening and speaking skills, promoting competence through interactive learning opportunities. Overall, these technological tools contribute to enhancing language proficiency by empowering learners to engage actively in various language learning activities while supporting their autonomy and competence.

Other students' responses emphasize how technology helps in keeping updated with changes and variations in language. This aspect supports autonomy by enabling learners to access current information and resources independently, thereby staying informed and adaptable in their language usage. It also enhances competence by ensuring that learners remain knowledgeable about evolving language trends and nuances, which is crucial for effective communication. The ability to stay updated through technology fosters a sense of competence by equipping learners with the necessary skills to navigate and adapt to linguistic changes in different contexts. Moreover, staying current with language variations supports relatedness by enabling learners to connect with broader language communities and discussions, fostering a sense of belonging and engagement in language learning.

Both responses illustrate how technology, as viewed through the lens of SDT, enhances language proficiency by promoting autonomy, competence, and relatedness. These technological advancements provide learners with opportunities to engage actively in reading, writing, listening, and speaking activities while supporting their intrinsic motivation and effective learning in language acquisition.

G. Have you noticed any differences in your skill development compared to traditional, in-person language learning?

Analyzing the differences in skill development between online and traditional, in-person language learning through the lens of Self-Determination Theory (SDT) (McEown & Baldwin, 2023), the responses provide insights into how technology impacts learning experiences. Various learners highlight the advantage of online learning in terms of note-taking. Using simulations and digital tools allows for interactive note-taking, where mistakes can be easily corrected without disrupting the flow of the lecture. This flexibility supports autonomy by giving learners control over their note-taking process, allowing them to revise and adjust their notes as needed during the lecture. This ease of correction enhances competence by ensuring that notes are accurate and comprehensive, thereby supporting better understanding and retention of the material. In contrast, the traditional in-person setting may limit autonomy as mistakes in notes could disrupt the flow of the lecture, potentially delaying corrections until later.

While other responses simply state "No," suggesting no noticeable differences in skill development between online and traditional, in-person language learning. However,

this brief response does not provide detailed insights into the impact of technology on autonomy, competence, or relatedness compared to traditional methods. The first response demonstrates how technology enhances autonomy and competence in language learning by enabling efficient note-taking and adjustment during lectures. These benefits align with SDT principles by supporting learners' intrinsic motivation and effective learning experiences. Conversely, a few responses lack detail but implies that for some individuals, the mode of learning online or in-person may not significantly affect skill development in language learning.

H. What are some of the key challenges or limitations you have encountered with technology-enhanced language learning?

When the issues and constraints of technology-based language learning are taken into account, a number of important matters arise out of the views presented by learners. Even though digital resources and the internet provide multiple benefits such as convenience, flexibility, and interactive materials they also pose barriers that may impair efficient learning. These are especially clear when viewed in the context of Self-Determination Theory (SDT), which defines autonomy, competence, and relatedness as three basic psychological needs for successful motivation and learning (McEown & Baldwin, 2023). The hurdles learners have experienced point to how technological interruptions and distractions can interfere with each of these needs, eventually disrupting the language learning process.

One of the most commonly cited worries among students is the distraction produced by mobile applications and notifications. In a computer-mediated learning setting, where students tend to use smartphones, tablets, or laptops to access language learning resources, the continuous stream of social media notifications, instant messaging apps, and entertainment content becomes an important cause of distraction. Such distractions decrease the learner's capacity to sustain deep focus in study sessions and split their attention. This is strongly related to the SDT autonomy principle, which highlights the learner's capability for regulating and controlling their own learning behavior. When external cues, like pop-up messages or the urge to check social media, take over the study environment, autonomy is undermined. Students have a harder time maintaining focus, becoming immersed in the material, or entering flow during their language activities. These distractions not only disrupt immediate learning performance but can even lead to a longer-term sense of frustration or decreased motivation.

In addition, the social effects of digital distractions also overlap with SDT's relatedness concept feeling connected to others. Some students say that when they learn online, they are torn between concentrating on their lessons and remaining socially

engaged. They fear that they might miss crucial messages from their friends or be excluded from social discussions, which dilutes one's dedication to intense learning. This is a manifestation of an internal conflict between the need to keep up with personal relationships and the objective to remain immersed in academic activities. Although technology facilitates smooth communication, it also introduces conflict between social engagement and constant concentration, a situation hard for many students to balance, particularly in autonomous learning settings.

Aside from distractions, students also encounter technical issues that impede learning. These include issues with internet connectivity, slow-loading websites, and bugs in the software that interrupt live lectures or hinder opening assignments and resources. These technical issues have a direct effect on the SDT aspect of competence, or an individual student's sense of proficiency in learning task management and mastery. When technical issues hamper students from being fully engaged e.g., not being able to enter a web session, turn in a submission, or enter a learning module their sense of success and accomplishment is affected. These interruptions can cause anxiety, de-motivation, and lower confidence, especially when students feel helpless to be able to solve the issues themselves.

In addition, technical issues also decrease autonomy by restricting when and how students are allowed to participate in their learning. Flexibility is one of the greatest advantages of technology-enhanced learning students can learn at their own pace and on their own timing. However, when technical issues happen, that flexibility is eliminated. Students can be compelled to postpone their acquisition or lose out on opportunities altogether, owing to factors outside their control. This lack of autonomy can be especially demotivating for highly self-motivated learners who want to be in control of their learning.

Each of these difficulties highlights the importance of an equilibrium and well-balanced incorporation of technology into language acquisition. Although digital technologies hold the promise of fostering autonomy, competence, and relatedness if utilized well, the lack of adequate management and technical stability can turn the tables. To ensure that technology really facilitates language learning, institutions need to equip students not merely with access to technology but also with skills on how to block distractions, techniques for sustaining concentration, and technical assistance to help them address complications speedily. Teachers and course developers should also think about having well-structured online settings that reduce unwanted distractions and provide room for intense individual work as well as worthwhile social interaction.

While technology-enhanced language learning presents many advantages, it has challenges that can disrupt learners' psychological demands and learning achievements.

Distractions from electronic devices, social pressure to stay connected, and technical issues can all interfere with the development of autonomy, competence, and relatedness. Through an awareness and understanding of these challenges, educators and policymakers can more effectively assist learners in working through the digital world, that technology should be used as an effective assistance tool, not a hindrance to language learning.

I. How can educators and policymakers better support you in navigating the integration of technology into language learning?

Educators and policymakers play pivotal roles in supporting learners to navigate the integration of technology into language learning effectively. Based on the responses provided, several key strategies can enhance support in this regard. Firstly, offering more free courses and scholarships can democratize access to education. By making quality language learning courses accessible at no cost, educators and policymakers promote equity and inclusivity, addressing financial barriers that may hinder access to educational opportunities. This approach supports autonomy by empowering learners to choose from a variety of learning options that suit their needs and interests without financial constraints.

Secondly, providing laptops or other necessary technological tools ensures that all learners, regardless of economic background, have the essential resources to engage in technology-enhanced language learning. This initiative enhances competence by equipping learners with the tools needed to effectively navigate digital platforms, participate in online classes, and access learning materials. It also supports autonomy by enabling learners to independently engage with educational content and activities.

Thirdly, increasing the education budget specifically allocated for online and remote education initiatives can enhance the quality and accessibility of technology-enhanced language learning programs. This investment supports the development of robust digital infrastructure, including reliable internet access and updated software platforms, which are essential for delivering effective online education. It also demonstrates a commitment to fostering relatedness by ensuring that learners feel supported and connected to the educational community through well-equipped digital learning environments.

Educators and policymakers can better support learners in navigating the integration of technology into language learning by prioritizing accessibility, providing necessary technological resources, and investing in the infrastructure needed for effective online education. These efforts not only promote autonomy and competence among learners but also foster a supportive and inclusive learning environment conducive to language proficiency development.

J. What additional resources or support do you believe would be beneficial for students like yourself?

To provide better assistance to students such as myself in learning languages and overall academic progress, provision of important resources and organized support systems is imperative. A number of areas of support can greatly enhance the general quality of our educational experience and enhance our ability to learn, utilize, and develop linguistically and professionally. Perhaps the most effective support would be the development of international partnerships, created and enabled by governments and institutions of education. These partnerships might involve student exchange schemes, online language relationships, or transnational projects. Through such ventures, learners would gain real access to alternative languages, cultures, and communication patterns, which would enhance our language learning through direct contact and interaction. Working alongside students from foreign nations would not only extend our skills but also enhance our intercultural awareness, which is increasingly useful in a globalized environment.

On top of cross-cultural teamwork, increasing access to internships involving the use of a second language would provide students with the chance to put their language skills into action in concrete, everyday situations. These internships, whether local or foreign, can really extend learners' competence and confidence. They help students cross the gap between theory and practice, which supports language acquisition and provides critical workplace communicative skills. Undertaking internships also encourages motivation and feelings of accomplishment, which are fundamental psychological motivators for long-term language learning.

No less significant is the furnishing of free or low-cost electronic devices like laptops, tablets, or smartphones along with stable internet connectivity. In an era when learning is increasingly digitized, these products are the gateway to web-based courses, learning platforms, and digital libraries. Financial constraints preclude access for many students to such resources, thus the possibility of inequalities in learning outcomes. By providing all students with the means, we encourage more independence in learning, where one can study at one's own pace, review concepts that are hard to grasp, and research further areas of interest outside the curriculum. Autonomy, as posited by Self-Determination Theory, enhances intrinsic motivation and a greater sense of competence among learners.

In addition, open access to digital libraries and scholarly databases can significantly improve the quality and extent of language learning. These resources provide extensive collections of books, journals, research papers, and language learning materials that assist students to understand better and broaden their horizons. With complete access to information, students can perform research, assignments, and independent learning more effectively. These resources are particularly beneficial for students in rural or resource-poor locations where physical libraries and academic support facilities might not be available.

The integration of international cooperation, work-based internships, exposure to digital tools and internet, and free learning resources constitutes an integrated support framework for language learners. Besides enhancing access and equity, they also boost motivation, competence, and autonomy. Collectively, they enable students to accomplish both academically and professionally with enhanced language skills and practical, transferable capabilities.

IV. Discussion

A. Frequency

Word	Length	Count	Weighted Percentage (%)
learning	8	366	4.38
language	8	279	3.34
technology	10	213	2.55
learners	8	105	1.26
competence	10	102	1.22
autonomy	8	99	1.18
tools	5	84	1.00
resources	9	78	0.93
motivation	10	75	0.90
students	8	75	0.90

The frequency chart is a clear summary of the most frequently used words that occurred in second language learners' interviews. It is an important chart in qualitative research since it identifies repeated words that represent the key ideas, issues, and themes presented by participants. Here, the chart does not merely show the frequency of each word's use but also their lengths, giving a more extensive linguistic picture of the data.

It is clear from the analysis that some words were used much more commonly than others, indicating their key significance in the responses of participants. The term "learning" was the most commonly used, and it occurred about 4.38% of the time in the dataset, which is a very high frequency. This indicates that most interviewees spoke about or mentioned learning-related experiences, learning strategies, or learning challenges. Since these interviews took place with students involved in second language learning, it is not entirely unexpected that "learning" was a very pervasive concept. It captures the learners' continuous interaction with learning processes and their consciousness of learning as a target and ongoing process.

Besides learning, the chart also shows other commonly cited words including "language," "technology," "motivation," and "competence." These words not only were frequent but also diverse in terms of length, from brief four-letter words to longer more complicated terms consisting of up to ten characters. For instance, the most abbreviated word among the commonly used set is "tool," with four letters. Being in the top word list tells us there have been discussions about different tools most probably technological or pedagogical used by students in assisting their language growth.

At the other end of the spectrum are more extended words such as "motivation," "competence," and "technology," which have as many as ten letters each. These words are not just longer in appearance but also conceptually rich, being the most central ideas in learner psychology as well as language education. Their frequent occurrence indicates that learners were thinking about their internal states (e.g., motivation), their perceptions of being able to learn (competence), and the outward supports or bases they are interacting with (technology). These words indicate that students are extremely sensitive to both environmental and cognitive elements that influence their learning process.

Also, the chart points out the equilibrium between technical words and generic words. While some words such as "tool" are easy and concrete, others such as "motivation" and "competence" imply a higher extent of understanding or familiarity with learning concepts, perhaps through class teaching or individual introspection. Finally, the frequency chart illuminates the lexical trends within the interview data. It affirms the pre-eminence of "learning" as the most prominent theme, bolstered by the prominence of words associated with it such as "language," "technology," and "motivation." The variation in word lengths from shorter, utilitarian words to longer, more abstract words cope with the variability in how students describe their language learning experiences. This analysis not only corroborates thematic findings but also gives insight into how students think about their development as second language users.

B. Word Cluster

The word cloud is an excellent visual representation of the most commonly used words throughout the interview data, providing a fast and easy overview of repeated patterns. In qualitative inquiry, word clouds are sometimes employed as a first-step analytical device to identify overarching patterns in large sets of text. Each word in the cloud is sized in proportion to its frequency within the dataset frequent words are shown in larger size, and less frequent words in smaller size. This visual method has the instant effect of drawing attention straight away to primary concepts, which were constantly discussed by the participants during the interviews.

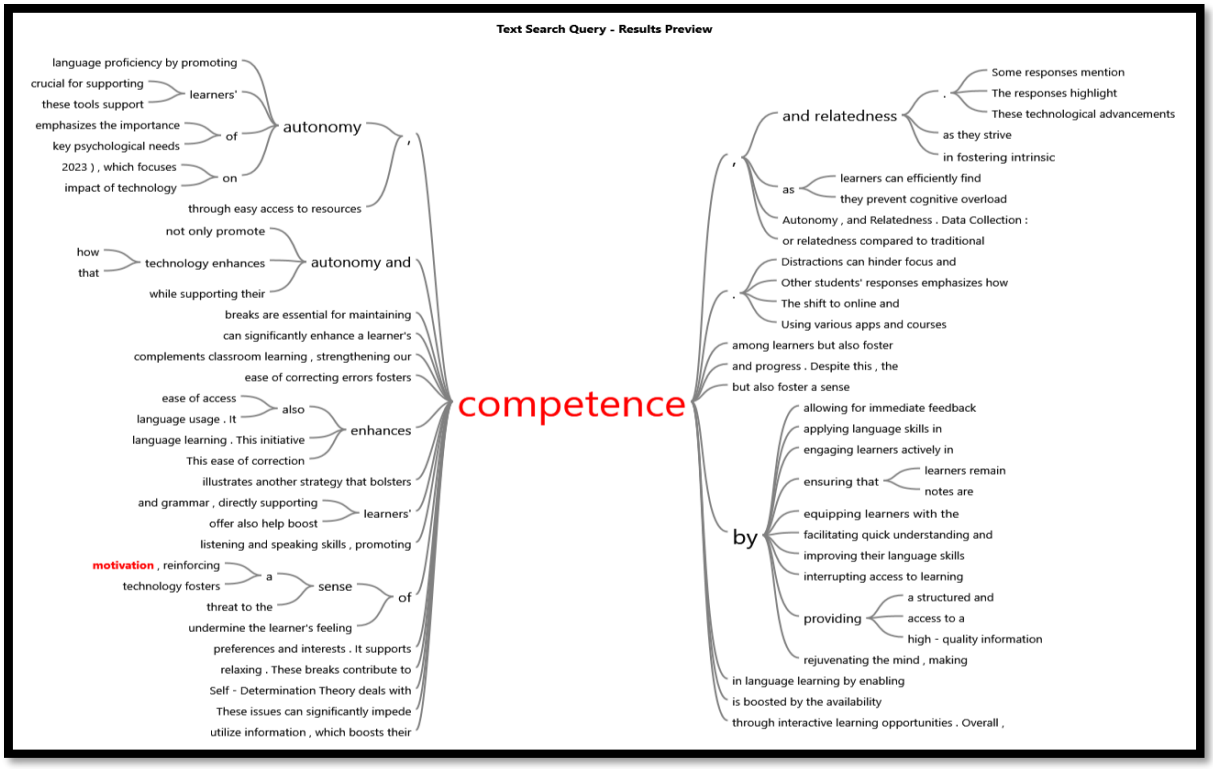
The word with the largest size in this specific word cloud is "learning.". This strongly suggests that "learning" was the most frequently used term across the dataset. Its frequency implies that the general theme of the interviews was something to do with learning presumably within language acquisition. They might have spoken about their own learning experience, the techniques they employ, the issues they encounter, or the resources that help them along their learning journey. The frequency of this term is an indication of its importance in the conversations and demonstrates that learning was a significant theme being referenced by numerous people throughout.

Encircling "learning" are other frequency words, including "language," "technology," and "competence." These cohere into a semantic cluster that discloses the thematic focus of the interviews. "Language" as a word implies that the interviews were about language learning per se perhaps English or some second language. It indicates that the respondents were discussing matters pertaining to language skills, use, fluency, and corresponding learning objectives.

The occurrence of the term "technology" in sufficiently large font size additionally accentuates its applicability in the responses of the participants. This is indicative of the use of digital platforms and tools in learning. Participants could have elaborated on how they are utilizing learning applications, internet-based resources, or virtual learning platforms to improve their language abilities. The repeated reference to "technology" might also reflect the fact that students are navigating the advantages and disadvantages of using digital learning tools. For instance, whereas some tools might engage and make learning more accessible, others might distract or lead to technical issues.

Also prominent is the word "competence," which has theoretical implications. Competence, from Self-Determination Theory, is a primary psychological need that affects motivation and successful learning. The occurrence of this term indicates that participants were interested in being able to execute successfully at language tasks. It can also be an indication of how learners experience their progress, ask for feedback, or become confident with language use. The word cloud is a brief yet compelling encapsulation of the principal ideas among participants. With "learning" being the biggest and most common term, and related words like "language," "technology," and "competence" sitting adjacent to it, the word cloud encapsulates the thematic meaning of the interviews. It is visually affirming of the emphasis on language learning and its core elements that facilitate or encourage this process.

C. Concept Map



The following concept map is built around the central psychological concept of "competence", and visually delves into how this very fundamental idea is connected with the main concepts of Self-Determination Theory (SDT) i.e., motivation, relatedness, and autonomy. These sub-themes branch out further into categories that describe the ways competence can be cultivated, established, and enhanced in learning environments for languages, specifically through the use of technological tools and reflective pedagogical methods.

Starting with the left column of the concept map, autonomy is a building block. Autonomy in learning is used here to refer to the extent to which students feel they can control their own learning experiences. Autonomy is crucial in language learning since it enables students to become proactive in their learning, set goals for themselves, and make decisions about how and when they should learn. The illustration shows how autonomy is strongly associated with the efficient application of technology, which significantly contributes to the availability of learning materials. Technology helps students access vast amounts of language tools such as mobile phone applications, online dictionaries, learning sites, podcasts, and interactive games. These resources not only make it easy to access genuine materials, but also offer versatile learning environments that can be adapted to suit varying learning styles and tempos.

Further down the autonomy strand, the concept map emphasizes the role of technological embedding in the classroom in fostering meaningful learning through reinforcing and giving constructive feedback. Programs that monitor student progress, deliver gamified quizzes, or utilize AI to provide instant corrections assist in reinforcing language structures and vocabulary. These systems of instant feedback enable students to adjust in a timely manner, which fosters a greater sense of progression and, as a result, increases their competence.

Another aspect under the autonomy category is taking short breaks in between lessons, which are recognized as helpful to keep learners' attention spans. Giving students a chance to rest and recharge strengthens their capacity for attention and information retention, which is key when learning a new language. Autonomy in self-managing learning rhythms supplied by instructors enhances mental health and long-term engagement. Consequently, this has a positive impact on the sense of competence of learners, who start to see their ability to remain interested, surmount obstacles, and see tangible progress.

Moving to the right of the diagram, the focus shifts to relatedness emotional and social connections that learners feel in the learning process. Relating to Self-Determination Theory, relatedness plays a significant role in building intrinsic motivation. The concept map reveals how competence is facilitated by social interaction, with a focus on factors like engagement, collaboration, and feedback in active learning settings. Peer interaction opportunities, group work, and discussions with teachers make students feel they belong to a learning community. When learners feel connected to their peers and teachers, they are more likely to participate actively, ask questions, and seek feedback all behaviours that contribute to a deeper sense of competence.

The concept map also emphasizes the function of organized access to information as an aspect of relatedness. When information is well-organized, regular, and presented plainly either in a learning management system or organized lesson plans it assists students in getting around their learning world with assurance. It minimizes cognitive overload and enables students to concentrate on developing their language ability.

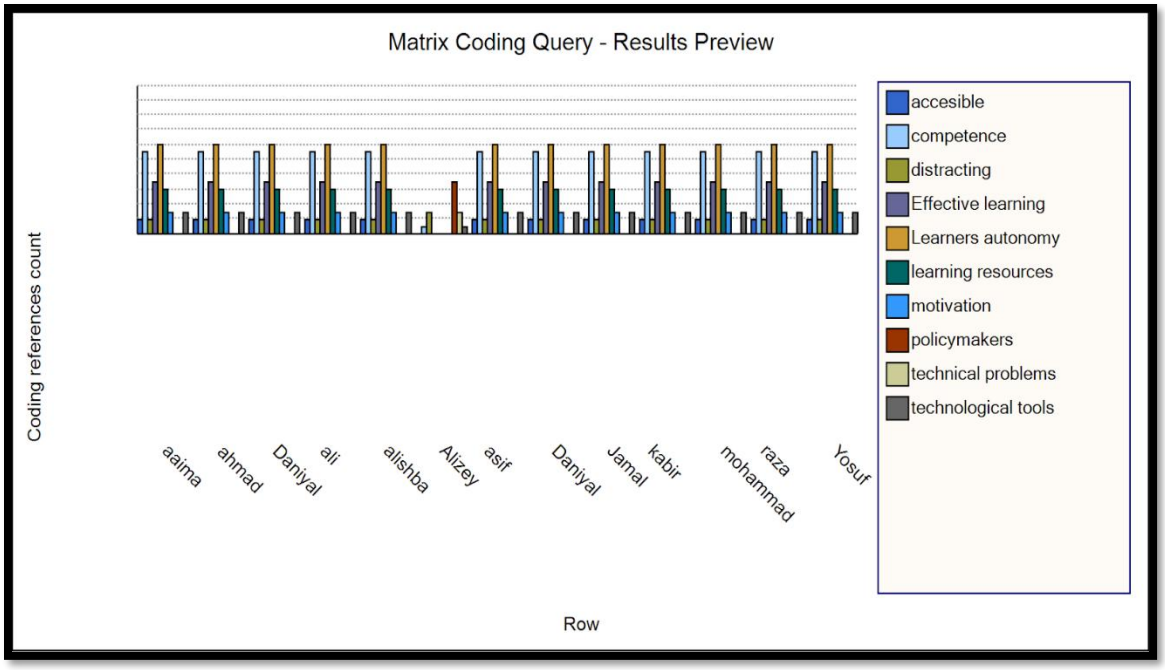
Strongly connected with autonomy and relatedness is the construct of motivation, which is located in the top region of the concept map. Motivation is depicted as a facilitative element that maintains learners' persistence in developing competence. Motivation is both intrinsic, inspired by personal interest and inner fulfilment, and extrinsic, propelled by external appreciation or reward. The map suggests that technological tools are normally dual-purpose when it comes to motivation. On the one hand, they enhance participation through interactivity, gamification, and immediate

feedback. On the other hand, they carry with them risks, such as distractions or overdependence on entertainment features, which can detract from deep learning. This two-sided nature reminds us that technology is a strong facilitator, but it needs to be carefully integrated and directed by pedagogical purpose.

In addition, the structure of the map emphasizes the interdependence among competence, motivation, autonomy, and relatedness, as a unified learning system. For example, when students perceive a sense of autonomy, they are more likely to be intrinsically motivated. When they perceive they are connected to others, they are more likely to remain motivated and persist despite difficulties. When all these are combined, they foster an environment in which students feel competent able to master the language, overcome barriers, and move toward their goals.

This concept map serves as a visual representation based on Self-Determination Theory, illustrating how the core idea of competence is not established independently but arises from an interdependent web of enabling conditions. By linking autonomy, relatedness, and motivation to competence and by illustrating how technology and well-designed learning environments have a facilitative role the concept map offers an integrated understanding of what enables student success in language learning. It focuses on the need to construct learning environments that are not only well-resourced but also socially interactive and psychologically empowering. As learners are provided autonomy, a sense of belongingness with others, and the motivation to engage meaningfully, they are much more likely to establish an enduring sense of competence that transcends the classroom and into the future use of the language.

D. Matrix Coding Query



Matrix Coding Query outcomes are graphically presented in a bar chart that clearly shows the occurrence of thematic references in qualitative data. The chart represents the distribution and intensity of coding across different word categories as used with different participants. On the x-axis, the chart presents the study or interview participants. These may represent individuals labeled as candidates, respondents, or interviewees, depending on the study's context. Each participant is marked with a unique identifier, allowing for a clear comparison between them. On the y-axis (vertical axis), the graph measures the reference count of the coded words. That is, it indicates how many times specific themes or word categories were coded and noted down when analyzing interview transcripts or qualitative data. References here indicate a frequency of how many times a theme was referenced, which could imply the relative standing or significance of a particular topic to a participant.

The height of each bar is visually proportional to the frequency of occurrence of a theme in the response of a given participant. The taller the bar, the greater the number of references, thus indicating recurrence or dominance of a certain idea or concept in the participant's contribution. Shorter bars indicate that the participant referred less to the respective theme, potentially as a sign of lower engagement with or salience of the topic for them. This type of data visualisation is used for various functions in qualitative research. For one, it provides a comparative picture of thematic interaction by all the participants so that patterns, variations, and similarities in opinions can be easily identified. For example, if a particular theme is repeatedly found with high frequency among the

majority of the participants, it can be taken as a salient or common issue in the group. In contrast, low or singleton reference counts for themes may reflect outliers or distinctive viewpoints that need further investigation. Furthermore, matrix coding bar chart assists the researcher in determining which themes were stronger for whom. This can be very useful in case studies or participant-based research with multiple varied background participants, as it can reveal the extent to which social, cultural, or experiential backgrounds affect the frequency and intensity of thematic reference.

Yet another important feature of this chart is that it adds to the rigor and transparency of the qualitative analysis. In that it displays graphically the coding process and outcomes, it provides an audit trail that adds credibility and validity to the researcher's interpretations. Stakeholders, supervisors, or peer reviewers can consult these charts and check if the conclusions that are drawn are based on the data. The matrix coding bar chart is a key tool in the representation of thematic analysis findings. Through plotting frequency of references by theme and by participant, it enables a subtlety of data understanding. Taller bars for themes reveal dominant ones across interviews, which represent repeated concerns or issues among participants. This visual representation not only helps in the identification of core themes but also secures the entire analytical procedure by ensuring clarity, depth, and accountability in qualitative research.

Conclusion

Bettering the language learning experience of students needs an interdisciplinary approach that not only addresses education requirements but also social, technological, and emotional support systems. Strengthening these support systems is one of the most significant ways to impact them, which can be done by launching strategic efforts like international partnerships, increased internship opportunities, and the availability of necessary technological resources such as free devices and stable internet access. These interventions, when well-integrated, have the potential to enhance learners' access to quality education and language learning contexts significantly.

Transnational collaborations are a potent force to engage learners in varied cultural outlooks and authentic language experience. Through institutional collaborations across borders, learners are subjected to varied linguistic milieus, enhancing their grasp of both the target language and its cultural deployment. Such partnerships may be in the form of student exchange programs, virtual language partnerships, collaborative research projects, or global webinars and workshops. Not only does such exposure enhance language proficiency but also global awareness and cross-cultural communication skills, both of which are becoming increasingly vital in the interconnected world of today.

Apart from global initiatives, expansion of internship opportunities for language learners is also equally essential in practice-theory realignment. Internships, particularly those in communication, translation, customer service, or content writing, allow students to apply the target language in real-world settings. Such exposure in a hands-on manner instills confidence, promotes applied use of language, and enhances employability. Additionally, internships open doors for networking opportunities, where students make connections that can pave the way for future employment or educational opportunities.

Just as critical is access to technological facilities. In today's educational environment, technological access and digital literacy are essential for effective language acquisition. Offering students free or discounted devices like laptops or tablets and high-speed internet connectivity guarantees all learners have access to online courses, digital materials, and autonomous language learning software. This is particularly important for underprivileged students, who may otherwise be denied access to valuable learning opportunities because of costs. Providing equal access to technology promotes educational equality and closes the digital divide.

These collective efforts significantly help to promote autonomy, competence, and relatedness in the language learners. When the learners are provided with necessary tools, opportunities, and institutional accommodations, they are likely to be more self-initiated in learning, attain a sense of control over the use of the language, and relate to their fellow learners as well as the larger global community. This not only increases motivation but also results in enhanced learning results and general well-being among the students.

By making international collaborations, hands-on learning experiences such as internships, and equal access to necessary technological resources their top priorities, teachers and policymakers can establish a supportive and inclusive framework for language learners. This holistic approach enhances students' capabilities in overcoming obstacles, building confidence in their strengths, and realizing their educational and linguistic aspirations. Ultimately, these efforts contribute to a more equitable education system that serves all students, no matter their background or individual situation, to succeed in an increasingly global world.

Bibliography

Asare, S., & Alhassan, H. (2023, july). *The Impact of Integrating Information Technology in Teaching English in College of Education: A Systematic Review*. Wikipedia. Retrieved June 2, 2024, from https://www.researchgate.net/publication/372751762_The_Impact_of_Integrating_Information_Technology_in_Teaching_English_in_College_of_Education_A_Systematic_Review

Bhat, R. A. (2023). THE IMPACT OF TECHNOLOGY INTEGRATION ON STUDENT LEARNING OUTCOMES: A COMPARATIVE STUDY. *International Journal of Social Science, Educational Economics, Agriculture Research and Technology*, *2*. https://www.researchgate.net/publication/373266726_The_Impact_of_Technology_Integration_on_Student_Learning_Outcomes_A_Comparative_Study

Francis, J. (2017, May 12). *The Effects Of Technology On Student Motivation And Engagement In Classroom-Based Learning*. DUNE. Retrieved June 4, 2024, from https://dune.une.edu/cgi/viewcontent.cgi?article=1120&context=theses

Islam, M. (2023, November 22). *(PDF) "The Impact of Using Technology in High-School ESL Classrooms in Bangladesh"*. ResearchGate. Retrieved June 3, 2024, from https://www.researchgate.net/publication/375800838_The_Impact_of_Using_Technology_in_High-School_ESL_Classrooms_in_Bangladesh

McEown, M. S., & Baldwin, Q. O. (2023, January 6). ,. , - YouTube. Retrieved June 10, 2024, from https://www.sciencedirect.com/science/article/abs/pii/S0346251X19301617

Quamer, Z., & Sahabat, A. (2024, January). The Use of Technology in English Language Teaching: A Thematic Analysis to Investigate the Effectiveness of Integrating Technology in the English Language Classroom. *THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES*, *12*.

SOLIKHAH, A. (2023, August). *Impact of Technology in Teaching and Learning English as Foreign Language : TESOL Context*. Academia.edu. Retrieved June 4, 2024, from https://www.academia.edu/106159218/Impact_of_Technology_in_Teaching_and_Learning_English_as_Foreign_Language_TESOL_Context