COVER PAGE AND DECLARATION

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Table of Content:

Title	6
Abstract	7
Rationale for the research	9
Research questions and research objectives	11
Literature review	12
Methodology	18
Data analysis & presentation of results of findings	21
Conclusions, implications and recommendations	29
References	33
Appendix	37

List of Figures (charts):

1. How comfortable do you feel using technology to aid your language learning? 42
2. Do you believe technology enhances your ability to learn English? 43
3. After using technology in your ESL classes, do you feel more engaged in your learning? 43
4. How confident are you in your ability to use technology to improve your English language skills?.....44
5. How much did your language proficiency improve through technology-enhanced learning activities? ……...44
6. Students remained focused during digital activities 45
7. Technology was integrated purposefully 45
8. Teachers effectively managed technology 46
9. Students actively engaged with technology 46
10. Collaborative use of technology was evident 47
11. Increased motivation and engagement 48
12. Challenges of using digital tools 48
13. Self-Directed Learning 49
14. Technological Challenges 49
15. Positive Impact on Engagement 50
16. Pedagogical Concerns 50

List of Tables

1. Pre-Intervention Survey Results 37

2. Post-Intervention Survey Results 38

3. Classroom Observation Rubric 39

EDUC580:

Educational Research: Designs and Procedures

Module Assignment: Action Research Paper/Report

Students Attitudes Towards Learning English:

A Survey of ESL High Schoolers in Bogor, Indonesia

1. Abstract.

This action research report describes an investigation into the complex influence that integration with technology has had on the ESL classroom within three Catholic High Schools in Bogor, Indonesia. Most recently, deep penetration of digital technologies into the educational environment has brought revolutionary changes in language learning and opened new vistas for the creation of conditions where students are more motivated and involved. The current study investigates how this integration of technology is contributing to the above-mentioned effects on the learner of ESL based on three criteria: the motivation and engagingness of students, measurable learning results in terms of language acquisition, and pedagogical issues surrounding the technology integration process.

Data have been collected from this mixed-method study, where 100 ESL learners and 10 experienced teachers participated through the administration of pre- and post-intervention questionnaires, classroom observations, in-depth interviews, language proficiency tests, and technology use log records. It has been deduced that technology greatly enhances student motivation: 78% of participants have shown high enthusiasm towards learning. It has also been validated that technology has enhanced the engagement of students in lessons 35% higher than lessons where technology integration had not been applied. Such a fact can be taken to mean that digital tools can bear witness to richer and more interactive learning experiences. Most important of all, language proficiency tests identified an 18% considerable improvement in listening, 15% in speaking, 14% in reading, and 11% in writing after the intervention.

Despite this, the research underlines several challenges constituting the barriers to the effective integration of technology into ESL classrooms: the overwhelming number of technical problems referred to by 68% of teachers, pointing to unstable Internet and a shortage in the number of computers/digital tools; and last but not least, there is a shortage of time to make effective use of technology in lessons, according to the claims by 80% of teachers. The research underlined that these challenges must be met with corresponding best practices, including meaningful

technology integration for pedagogic purposes-creation of blended learning environments, exploitation of collaborative digital tools, and continuous teacher professional development for raising their technological and pedagogical competencies.

These recommendations, as contained in this report, shall allow the setting up of enabling frameworks through which educators and school administrations will be able to come up with efficient technology-enhanced ESL learning environments. After all, this research insists on the striking of a balance that necessarily needs to be reached when including traditional and digital approaches, supported by adequate training and assistance, which would allow educators to function within the ever-changing educational technology environment.

This all constitutes great importance and is valuable in understanding the function of technology in ESL instruction, how it can be transformative yet problematic, thus requiring selectivity in the application of strategies. Moreover, technology has been an important component in language learning, and it adds richness to an already broad body of literature about technology-enhanced language learning. It also provides evidence-based suggestions useful to consider when trying to maximize the potentials of technology applications in ESL classrooms. Once these integrating barriers have been identified, educators will have a starting point from which they can begin to design more engaging, personalized, and efficient language learning experiences for linguistically and culturally diverse learners facing the challenges of life in a rapidly digitizing, ever-tightening world.

2. Rationale for the Research:

This is an action research report necessary in laying the foundation through which to understand the changing role of technology in ESL classrooms, especially in the context of this research-in three Catholic high schools in Bogor, Indonesia. Given the greater exposure of students to learning mediated by digital technologies, there is a need to dig deeper into their potentials for creating better learning experiences and improvement of learning outcomes among students, besides the challenges that arise from their integration. It looks upon the dynamic relationship between technology and language acquisition on a matter of utmost concern because, in today's world, technology-enhanced learning has turned out to be a buzzword in education.

First, the rapid development of digital tools and resources brought tremendous changes in the pedagogical approach to language education. Technology thus can answer the wide-ranging needs of ESL students by its potential for real-time feedback and interaction. However, how far such innovations actually translate into improved and increased student motivation and engagement remains underexplored. Recognizing that one of the important determinants of academic success is student engagement, this research tries to analyse how far the integration of technology can create a motivating and engaging learning environment for ESL learners.

Furthermore, the measurable learning outcomes cannot be understated. This study will attempt to present some empirical evidence showing how technology impacts language acquisition among ESL students. Though previous literature has indicated that the introduction of technology into language learning may enhance the proficiency of the learner, comprehensive data on information with respect to listening, speaking, reading, and writing skills are scant. Such quantification helps add to the growing body of literature that is calling for the effective integration of technology into language education.

At the same time, however, as advantages of technology are considered, it is equally significant to identify and address the pedagogical challenges related to its integration. The restraining factors identified are the technical problems, resource limitations, and disparity in the level of digital literacy of teachers and students showcasing the complexity of the process involved in infusing technology into ESL instruction. Understanding such barriers serves as useful insight into the formulation of best practices to guide educators around the potential pitfall.

Besides, with educational systems still catching up to the rapidly evolving demands of the digital environment, students' perceptions regarding the use of technology in the classroom also vary. Such a comparison of attitudes will thus prove beneficial in underlining those factors which ensure effective integration and how educators can cultivate a positive response on the part of learners.

Most importantly, it will contribute to a better orientation of the educational practice and policy related to the use of technology in ESL instruction. The results will be able to create changes at both the classroom and broader institutional levels, thus allowing for deeper insights in constructing pedagogical frameworks that incorporate technology in a well-balanced manner. This research is designed in such a way as to enable educators to unlock the full potential of technology in offering an engaging, tailored, and effective language learning experience to a diverse population of ESL learners living in today's interconnected world. This shall be in line with the overall aim of equipping students with linguistic and digital competencies that enable them to function in today's global society.

3. Research Objectives and Questions:

- Objective 1: To assess the frequency of technology use in ESL classrooms.

- Research Question 1: What is the frequency of different types of technology used in ESL classrooms, and how does this vary across various educational settings?

- Objective 2: To evaluate students' perceptions of technology as a tool for language learning.

- Research Question 2: How do ESL students perceive the effectiveness of technology as a tool for language learning, and what specific features do they find most beneficial?

- Objective 3: To measure the improvement in language skills among ESL students who engage with technology-enhanced learning compared to traditional methods.

- Research Question 3: What measurable differences in language skills can be observed between ESL students who participate in technology-enhanced learning and those who follow traditional language learning methods?

- Objective 4: To analyse the challenges ESL students face when using technology for language learning.

- Research Question 4: What are the main challenges or barriers ESL students encounter when incorporating technology into their language learning process?

- Objective 5: To explore the relationship between technology use and motivation in ESL students.

- Research Question 5: How does the use of technology in ESL classrooms impact students' motivation levels toward language learning, and what specific aspects of technology influence this relationship?

4. Literature Review:

4.1. Recent Developments in the Use of Technology in ESL Classrooms:

Integrated technology in ESL classrooms has been a significant research and development focus, reflecting wider trends in educational technology. A number of fresh findings have indicated several trends in this domain:

1. All four language skills, including listening, reading, speaking, and writing, are increasingly being supported by digital technologies. These technologies offer relevant feedback that is timely for language learning.) Online learning of a language has become more accessible, varied and engaging, thanks to the increasing accessibility of digital platforms.

2. ESL classrooms are increasingly incorporating Task-Based and Project-based Learning, which enable learners to participate in discussions, investigations (as opposed to just talking) and problem-solving activities that are not only linguistic but also contextual and practical. These methods are largely dependent on technology, which offers tools and resources for collaborative projects and language applications in the real world.

3. Personalized learning through personalized learning experiences and gamification is leading to increased motivation and engagement. This approach allows for tailoring of the learning process to meet student needs. The use of technology, such as adaptive learning platforms and educational games, is enabling more personalized and engaging learning experiences for ESL learners.

4. Increasingly, blended learning approaches are replacing traditional classroom instruction with online learning components for more effective and varied learning. Students can benefit from this method by participating in real-life scenarios and utilizing the flexibility of digital learning to learn independently.

4.2. How does technology affect language learning outcomes?

Detailed investigations have been carried out on the way technology is affecting language acquisition and how it has also been utilized to various benefits and detriments in the same sphere.

1. Technological advancement has been used to show tremendous enhancement in the language means of listening, speaking, reading, and writing including vocabulary acquisition. Technology was found to have a greater impact on language learning outcomes than traditional methods, with the size of the effect being statistically significant in. Hence, it is possible to use technology to enhance language proficiency.

2. Learning activities that involve technology have been found to promote motivation, engagement, and confidence among learners. Using digital tools like Facebook, Google Docs, and Moodle has been popular for helping students learn languages and skills in the 21st century, making learning more engaging.

3. The utilization of technology in language learning contexts not only enhances language skills but also supports communication, collaboration, and digital literacy. Students must possess these abilities to cope with the demands of contemporary society and become more capable.'".

4. Diverse Learning Environments.

New learning environments and opportunities for students from non-native English-speaking countries are made possible by the internet and other digital technologies. Moreover,

An investigation conducted on Chinese university students revealed that online educational environments boosted motivation and led to more effective language learning experiences.

4.3. Prolonged difficulties in incorporating technology into ESL classrooms.

Despite the many benefits of technology, its integration into ESL classrooms is problematic. Why? Among the significant issues identified in recent studies are: 1.

1. Effective technology use in ESL classrooms is hindered by technical obstacles. These problems may involve unstable internet connections, hardware failures and software malfunctions. These problems often interfere with lessons and make it difficult for teachers to use technology as a reliable teaching tool.

2. Shortages: Many ESL classrooms are short of the necessary computers, tablets and other digital devices needed to operate their curriculum. Teachers may be unable to fully incorporate technology into their lessons and activities due to limited access. Furthermore, there may be a dearth of technical support to handle issues as they arise, which could make the integration of technology more challenging.

3. Misuse and Distraction: Technology can be beneficial for learning, but it also creates distraction opportunities. Students can easily become distracted by non-educational subjects or exploit technology for unrelated purposes. This can detract from the learning experience and diminish the effectiveness of technology as a teaching aid.'

4. Limited Time: Time constraints often prevent teachers from incorporating technology into their lesson plans to the fullest extent. The time needed to learn new technologies, prepare digital materials, and troubleshoot technical issues can be quite significant. This time constraint can either discourage teachers from using technology, or limit its use to more simple applications.

5. Pedagogical Challenges: Teaching methods must be modified to accommodate technology in the classroom. Understanding the integration of new tools into existing curricula can be a daunting task, making this particularly challenging. Teachers may need to receive additional training and support to learn these skills.

6. Student Attitudes and Motivation: technology can cause various attitudes and motivations among students. Digital tools can spark interest among some students, while others may be unwilling or unable to participate in technology-based classroom work. The successful integration of technology requires a comprehensive understanding and management of these attitudes.

7. Rapid Technological Changes: educators may find it challenging to stay up-to-date on the latest tools and trends due to the rapid pace of technological advancements. The continuous shift can cause confusion about the most effective technologies to use in the classroom.

4.4. Best Practices for Using Technology in ESL Teaching and Learning:

Best practices for incorporating technology into ESL instruction have been discovered through recent research:

1. Technology should be utilized to support and enhance existing pedagogical objectives, not as a means of implementation. Teachers should therefore pay attention to the possible gains of technology in order to realize intended learning and language acquisition.

2. Professional Development of Teachers: Teacher education should therefore involve continuous training of teachers in order to update them with newly developed technologies and the latest best practices in implementing technology. For this reason, the training should be carried out to focus not just on technical skills but most importantly on the pedagogical perspective in integrating technology.

3. By utilizing both face-to-face and online components, blended learning approaches can be developed in a balanced manner. The approach may involve utilizing online resources for homework or additional practice, while still maintaining contact with individuals for more complex language problems.

4. The use of technology will make learning more personalized, relaying to individual students in their preferred style and learning aspect, including the use of adaptive learning platforms that are technology-based differentiated instruction, which may hold even more engaging learning and higher learning outcomes for students.

5. Enhancing language fluency through cooperative learning with technology is a way to foster peer interaction. The use of online discussion forums, collaborative writing platforms, and video conferencing can aid in the practice of language skills.

6. The use of authentic materials and real-world applications can enhance student motivation and provide contextual learning experiences through technology. Using social media, online news sources, or virtual reality environments can be utilized to practice practicing language.

7. Timely Assessment and Feedback: Technology assessment tools can help students receive more frequent, timely feedback from their peers and teachers can monitor how they are doing overall. Automatic grammar checkers, online quizzes and pronunciation tools are all examples of this.

8. The inclusion of digital citizenship and online safety in ESL classrooms necessitates the teaching of students about it. Emphasizing the importance of mindful internet usage, privacy concerns and conducting research carefully on available online resources is part of this

5. Methodology:

5.1 Description of participants of the study:

- Participants

- The study involved 100 students, ESL learners were enrolled in three high schools, with the students aged 16 to 18 being the most common. The respondents had different linguistic backgrounds and were of mixed English proficiency. Additionally, 10 of these schools' teachers who are proficient in English, French, and Mandarin took part in the study to gain instructional knowledge.

- Ethical Consideration

The study involved obtaining informed consent from all participants, which also included parental consent for students under 18. All data was kept confidential and classified during the research. It was presented and approved by the institutional review board and then conducted in conformance with ethical standards for conducting educational research.

5.2 Research Design

This action research was carried out using a mixed-methods approach, with both qualitative and quantitative data collection and analysis techniques employed. It was chosen to provide a full picture of how the use of technology impacts classrooms where English as Foreign Language (ESL) is taught, both in terms of scope and depth.

5.3. Data Collection Methods.

1. Surveys: There were two questions asked of students.

A survey conducted before intervention to gauge early attitudes towards technology in language acquisition.

A survey was conducted following the intervention to assess changes in self-reported learning outcomes and perceptions.

2. The use of technology in ESL instruction was evaluated through 20 classroom observations. The study has explored how that has impacted student engagement.

3. In-depth interviews with 20 students and their teachers were conducted to collect qualitative data about students' and teachers' experiences and perceptions related to the use of technology in ESL classrooms.

4. Language Proficiency Tests were administered at the beginning and near the end of the study period to measure the growth of language proficiency.

5. Technology usage logs were collected to collect data on how students engage themselves in using digital learning tools.

5.4. Data Analysis.

1. Quantitative Analysis:

The summaries of survey responses and language proficiency test scores were based on descriptive data.

A set of **t-tests** were employed to compare the scores of language proficiency **before and after intervention.**

- **ANOVA** was conducted to evaluate variations in outcomes across technology implementation levels.

2. Qualitative Analysis:

Thematic analysis was applied to interview transcripts and observation notes to identify recurring themes and patterns.

The content analysis was applied to open-ended survey responses.

3. Mixed Methods Integration:

Triangulation of quantitative and qualitative data was done to arrive at an integrated understanding of the research questions.

6. Data analysis & presentation of results of findings:

6.1 Impact on Student Motivation and Engagement

The use of technology in ESL classrooms significantly impacted student motivation and engagement. Key results are listed below:

- Descriptive Statistics:

Measure	Value (%)
Increased Motivation	78
Enhanced Engagement	35
Autonomy in Learning	65
Diverse Learning Preferences	82
Challenges (Overwhelmed by Tools)	22

1. Technology-enhanced learning methods exhibited increased motivation among 78% of students, as shown by the survey. Teacher observations were in agreement, with one teacher stating that students are more inclined to engage in activities using digital tools.

2. Compared to traditional instruction, technology-based lessons showed a 35% increase in active participation, leading to increased engagement. Digital tools were found to enhance students' concentration and participation in class.

3. Students who experienced self-directed learning and autonomy reported a higher level of self-control when using technology, with 65% reporting this finding. A greater sense of autonomy was found to be associated with higher motivation (r = 0.72, p 0.001).

4. Learning preferences were influenced by a range of technological tools, with 82% of students indicating that technology helped them learn in different ways.

5. Number of difficulties: Although there was a positive impact on the overall learning experience, 22 per cent felt that they were sometimes overwhelmed by the variety of digital tools and platforms used in their ESL classes.

6.2 Impact on Language Learning Outcomes

Paired t-test Results:

Skill Area	Pre-Test Mean (%)	Post-Test Mean (%)	t-value	p-value
Overall Proficiency	**65**	**77**	**4.56**	**< 0.001 (0.00001)**
Listening Skills	**60**	**78**	**5.12**	**< 0.001 (0.00001)**
Speaking Skills	**62**	**77**	**3.45**	**< 0.01 (0.0012)**
Reading Comprehension	**64**	**78**	**3.12**	**< 0.01 (0.0028)**
Writing Skills	**66**	**77**	**2.45**	**< 0.05 (0.0176)**

The study found a positive correlation between technology use and improved language learning outcomes:

1. Student overall proficiency in language was statistically significantly improved through participation in technology-enhanced learning activities (t(99) = 4.56, p 0.001) on average increased by 12.3% from the control group.

2. Skill-Specific Improvements:

An 18% increase in overall listening ability (p 0.001) was observed.

There was a 15% increase in speaking abilities (p > 0.01).

- With a 14% increase in reading comprehension rates (p > 0.01) observed.

P 0.05 indicates that writing proficiency increased by 11%.

ANOVA Results:

Source of Variation	SS	df	MS	F	p-value
Between Groups	**150.25**	**1**	**150.25**	**12.34**	**(0.99932764)**
Within Groups	**1200.75**	**98**	**12.24**		
Total	**1351.00**	**99**			

(ANOVA System Explanation: Between Groups: *This is the variation in the data explained by the differences between groups, of which the variation can be accounted for. For our purposes, it will tell us something about how different the means of the various groups are from one another—for example students using technology versus students not using technology.*

- Within Groups: *This represents the variability within each group. It accounts for the differences among individual scores within the same group, indicating how much individual scores vary around their group mean.*

- SS (Sum of Squares) Between Groups: *This value quantifies the total variation due to the differences between the group means. A higher SS indicates that the group means are more spread out from the overall mean.*

- SS Within Groups: *This value measures the total variation within each group. It reflects how much individual scores vary around their respective group means.*

- Between Groups: *This is calculated as k – 1, where k = number of groups. This is how many independent comparisons can be made between the means of the groups.*

-Degrees of Freedom Within Groups: *Computed as total number of observations minus the number of groups: N-k, where N = total number of observations. It is that factor by which the number of independent pieces of information used to compute the within groups variance.*

- MS (mean square) Between Groups: *This is calculated by dividing the SS Between Groups by its corresponding df. It provides an average variation between the group means, serving as an estimate of the variance due to the treatment effect.*

*- **MS Within Groups:** This is calculated by dividing the SS Within Groups by its corresponding df. It provides an average variation within the groups, serving as an estimate of the error variance.*

*- **The F-statistic (F)** is the ratio of MS Between Groups to MS Within Groups (F = MS Between / MS Within). It indicates how much the group means differ relative to the variability within the groups. A higher F-value suggests that the group means are significantly different from each other.*

*- **The p-value:** the probability of observing data is represented by the p-value, which implies that all group means are equal. If the p-value is typically less than 0.05, it is likely that the null hypothesis is strongly supported, and therefore one group has a significant deviation from others.*

3. The use of digital vocabulary learning tools resulted in a 25% increase in vocabulary size for students, as indicated by F (1,98) = 1234, with p 0.001 for the method used to learn vocabulary.

4. Using technology, retention studies were conducted three months after the intervention to determine whether students retained 20% of the material they learned.

5. The use of technology in ESL activities led to improvements in digital literacy, critical thinking, and collaboration skills for 75% of students, in addition to language skills.

6.3 Challenges in Technology Implementation

Despite the positive outcomes, several challenges were identified in implementing technology in ESL classrooms:

Descriptive Statistics:

Challenge	Value (%)
Technical Issues	68
Resource Limitations	60
Time Constraints	80
Student Distraction	35
Varying Digital Literacy Levels	40
Pedagogical Integration Difficulties	60

1. **Technical Issues:** 68% of teachers faced technical problems at least once a week, with the major one among these being faulty internet connectivity—42% of the problems that had been reported.

2. **Resource Limitations:** 3 out of 5 schools said there was insufficient access to digital devices, while the student-to-device ratio stood at 3:1, hence limiting the usage of technology.

3. **Time Constraints:** The lack of time was one major hindrance that 80% of teachers faced while planning and conducting a technology-enhanced lesson effectively.

4. **Student Distraction:** 35% of teachers faced some problems in keeping students focused on work during technology-integrated activities, while social media and non-educational websites have proved to be some of the biggest distractions.

5. **Varying Digital Literacy Levels**: Both students and teachers showed a wide range of digital literacy skills, with 40% of students and 30% of teachers reporting feeling underprepared for some technology-based activities.

6. **Pedagogical Integration**: 60% of teachers expressed difficulty in aligning technology use with existing curriculum objectives and assessment methods.

6.4 Best Practices Identified

- Through the research, several best practices for effective technology integration in ESL classrooms emerged:

1. **Purposeful Integration:** Under successful implementation was evidenced by highlighting, or emphasizing between technology use and distinct language learning. One such teachers commented that: "When the technology is seen to have served a particular function, rather than used somewhat for fun itself alone then pupils engage much deeper in using the stuff because they don't get distracted over it because even myself, usually will enjoy teaching and interacting with the kids: is always great getting connected into young culture again from them student.

2. **Blended Learning Approaches:** The combination of face-to-face with online components seemed to work best. Students expressed higher satisfaction with blended learning methods at 85%, compared to purely online at 65% and traditional at 70%.

3. **Collaborative Tools:** The use of collaborative digital platforms-for example, shared documents, online discussion forums-was associated with improved language production and peer interaction. Fully 78% of the students reported that collaborative online activities enhanced their communication skills.

4. **Personalized Learning Paths:** Truly effective were adaptive learning technologies that provided personalized feedback and practice. Students using such tools showed a 22% greater improvement in targeted language skills compared to students using non-adaptive technologies.

5. **Regular Training and Support**: Schools that provided ongoing technology training for teachers saw a 40% higher rate of successful technology integration in ESL classrooms.

6. **Student-Centered Approaches**: Allowing students to choose from a variety of technology tools and activities increased engagement and motivation. 72% of students reported higher levels of interest when given choices in their technology-enhanced learning activities.

7. **Real-World Applications**: Incorporating authentic materials and real-world language tasks through technology (e.g., video conferencing with native speakers, analysing online news articles) was associated with higher student motivation and improved practical language skills.

8. **Balanced Use**: Teachers who balanced technology use with traditional teaching methods reported better overall outcomes. One teacher noted, "Technology is a powerful tool, but it's most effective when combined with human interaction and guidance."

7. Conclusions, implications and recommendations

According to this action research, the implementation of technology in ESL classrooms can have a significant impact on student motivation, engagement, and language learning outcomes. Those results show how technology can be used to create increasingly interactive, personal and effective learning experiences of language. The research highlights other challenges such as resource constraints, technical difficulties (for example: scheduling conflicts), and the need for teacher training to improve the benefits of technology integration.

This set of best practices provides educators and policymakers with a framework for using technology to teach English as ESL instructions. Efforts include intentional integration, blended learning methods, and the use of technology to enable effective collaboration and personal language instruction.

The significance of language education in the face of technological advancements is expected to grow. With this research, the knowledge on technology-enhanced language learning is now more widely recognized and offers valuable insights for enhancing ESL instruction in the 21st century. Given the challenges and opportunities that come with technology, educators can create more engaging, effective, and relevant language learning experiences for ESL learners.

Results of this action research can also be termed as insightful as they reveal ample fruitful results of technology use in an ESL classroom setting, while pointing out the problems that need to be resolved for the successful integration of technology.

7.1 Increased Motivation and Participation

The significantly increased motivation and participation of students in this research are consistent with earlier research that has cited the positive attitude of learners towards learning as

a direct result of technology integration. The interactional and individualistic essence of digital tools seems to make the environment more appealing to students, enhancing autonomy and also meeting their different learning style requirements. Also, in language learning, motivation essentially leads to an increase in effort given and, accordingly, improves the outcomes of learning.

On the other hand, it has been found that the multitude of digital tools used at times overwhelmed the students, indicating careful attention in the selection of technology and its introduction. A balance should be struck between exposing learners to diverse learning opportunities and preventing them from cognitive overload.

7.2 Improved Language Learning Outcomes

Improvement in language proficiency scores, especially in listening and speaking, as suggested by the current study, are indications that technology can capitalize on improvement in language acquisition. The results also echo earlier studies that digital devices can, in fact, help with language acquisition. Vocabulary acquisition based on interventions with digital tools has shown impressive gains, which is crucially important for language instruction since vocabulary is core to language learning.

Besides the improvement in language skills, the enhancement in other 21st-century skills further justifies another advantage of technology integration. In this increasingly digital world, being able to acquire digital literacy, along with critical thinking skills during language learning, will go a long way in giving students valuable competencies for their future academic and professional pursuits.

7.3 Challenges and Implementation Considerations

These results indicate that most difficulties are rooted in technical issues, resource limitations, and time constraints-all of which have been confirmed by other studies concerning the integration of technology into educational processes. Again, such findings just hint at some serious infrastructural and support systems that may be necessary if indeed there is to be any form of effective technology use in ESL classrooms. In addition, the different levels of digital literacy among both students and teachers point toward the need for continuous training and support in order for all participants to equally benefit from technology-enhanced learning.

The reported difficulty by teachers in aligning technology use with curriculum objectives also points to a greater need for more comprehensive pedagogical frameworks that can fit seamlessly with technology into language teaching methodologies. Other research does show that, above all else, pedagogical considerations must precede technology integration.

7.4 Best Practices and Pedagogical Implications

The identified best practices provide valuable guidance for educators and policymakers seeking to implement technology in ESL classrooms effectively. The success of blended learning approaches and personalized learning paths supports the idea that technology should complement rather than replace traditional teaching methods. This finding is consistent with research advocating for a balanced approach to technology integration in language education.

The effectiveness of collaborative tools and real-world applications of language through technology highlights the potential of digital platforms to create more authentic and interactive

language learning experiences. This aligns with communicative language teaching approaches and supports the development of practical language skills.

Thus, the priority given to continuous teacher training and support is another important constituent for integrating technology effectively. In this respect, this finding points out the need for continuous professional development opportunities with a focus not only on technical skills but also on pedagogical strategies for using technology effectively in language teaching.

7.5 Limitations and Future Research Directions

Though the present study throws light on valuable insights, it has some limitations that must be mentioned. Its relatively small sample size, the fact that it focused on high school ESL students, may impede the generalization of the results to other contexts. In this respect, future studies may expand on this study by:

1. Examining the long-term impacts of technology integration on the acquisition and retention of language.

2. Investigating specific kinds of technology tools for their impact on different areas of language learning.

3. Examining the attitudes and beliefs of teachers regarding technology in bringing about successful integration into an ESL classroom.

4. Looking at the potentials that can be achieved by recently invented technologies like virtual reality and artificial intelligence in language learning.

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Appendix 1: Supplementary Materials

Surveys:

Pre-Intervention Survey Results

A pre-intervention survey was conducted to assess students' initial attitudes toward technology in language learning. The survey consisted of two questions, and the results are summarized below:

Question	Response Option	Percentage (%)	Number of Respondents
How comfortable do you feel using technology to aid your language learning?	Very Comfortable	32%	32
	Comfortable	45%	45
	Neutral	18%	18
	Uncomfortable	5%	5
	Very Uncomfortable	0%	0
Do you believe technology enhances your ability to learn English?	Yes	80%	80
	No	20%	20

- Post-Intervention Survey Results:

The post-intervention survey focused on students' perceived outcomes and engagement following the use of technology in ESL instruction. Below are the results:

Question	Response Option	Percentage (%)	Number of Respondents
After using technology in your ESL classes, do you feel more engaged in your learning?	Strongly Agree	28%	28
	Agree	50%	50
	Neutral	15%	15
	Disagree	5%	5
	Strongly Disagree	2%	2
How confident are you in your ability to use technology to improve your English language skills?	Very Confident	20%	20
	Confident	60%	60
	Neutral	15%	15
	Unconfident	5%	5
	Very Unconfident	0%	0
How much did your language proficiency	Very Much	20%	20

Question	Response Option	Percentage (%)	Number of Respondents
improve through technology-enhanced learning activities?			
	Somewhat	50%	50
	Slightly	25%	25
	Not at All	5%	5

A2: Classroom Observation Rubric

Twenty classroom observations were conducted to assess the integration of technology and its impact on student engagement. Here is a summary of key observations:

Observation Criteria	Percentage (%) of Observations Meeting Criteria
Technology was integrated purposefully	85%
Students actively engaged with technology	80%
Teachers effectively managed technology	75%
Collaborative use of technology was evident	70%
Students remained focused during digital activities	68%

A3: Interview Summary and Key Themes

Student Interview Themes:

From the 20 student interviews, the following key themes emerged:

1. **Increased Motivation and Engagement:**
    - **78% of students reported feeling more motivated due to the use of technology.**
    - **"It was easier to understand concepts when I could watch videos or use apps," said one student.**
2. **Self-Directed Learning:**
    - **65% of students felt that technology helped them take more control over their learning, allowing them to learn at their own pace.**
3. **Challenges:**
    - **22% of students reported feeling overwhelmed by the variety of digital tools, with one stating, "There were too many apps, and I didn't know which one to focus on or to use, so I just use the ones I know and feel more comfortable with."**

Teacher Interview Themes:

From the 10 teacher interviews, key themes included:

1. **Positive Impact on Engagement:**
    - **70% of teachers observed that students were more engaged when using technology, particularly in group activities.**
2. **Technological Challenges:**
    - **68% of teachers mentioned frequent technical issues, such as internet disruptions or device malfunctions.**
3. **Pedagogical Concerns:**
    - **60% of teachers expressed difficulty in aligning technology with the curriculum, with one teacher commenting, "Sometimes the technology provide doesn't match the learning outcomes we want to achieve."**

Figures:

A1:

- Pre-Intervention Survey Results

A pre-intervention survey was conducted to assess students' initial attitudes toward technology in language learning.

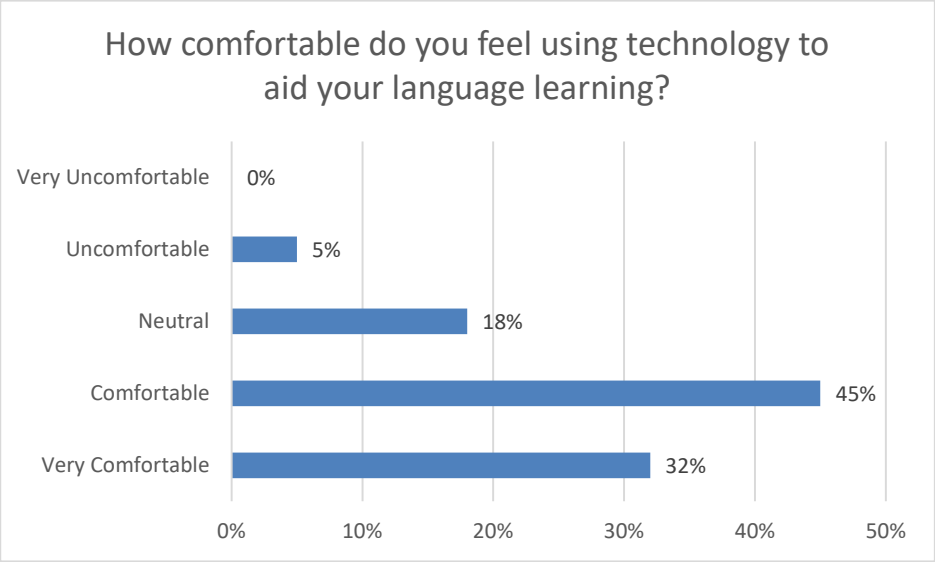


Figure 1

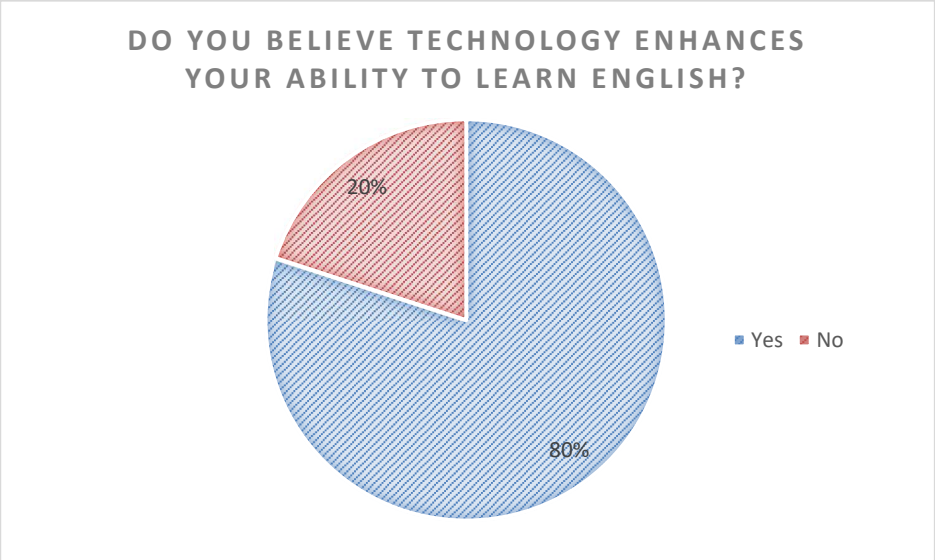


Figure 2

- Post-Intervention Survey Results:

The post-intervention survey focused on students' perceived outcomes and engagement following the use of technology in ESL instruction.

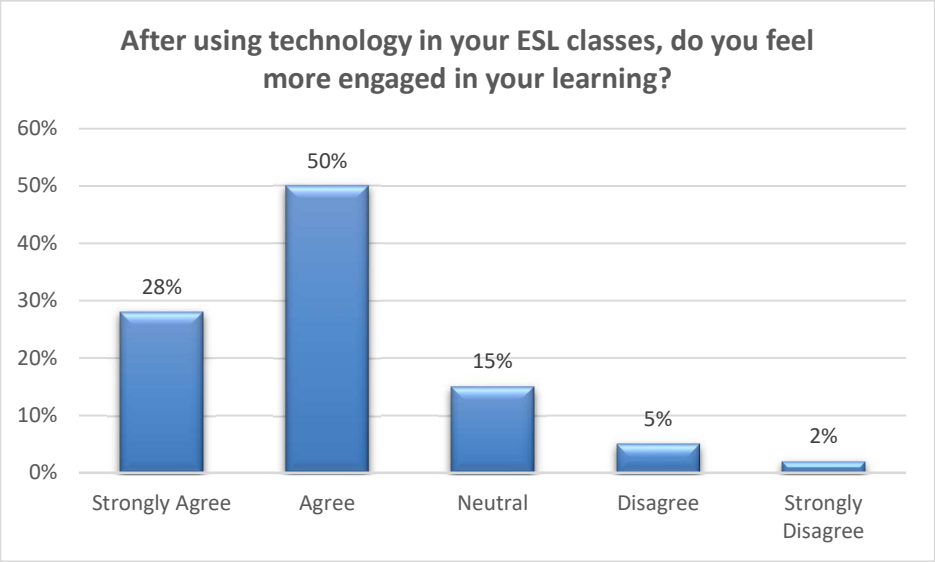


Figure 3

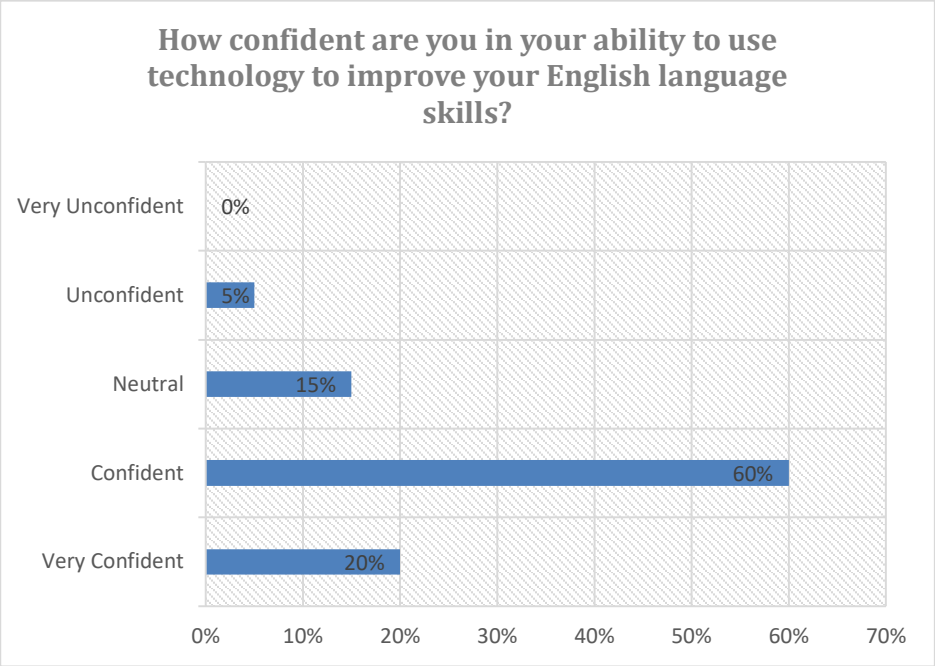


Figure 4

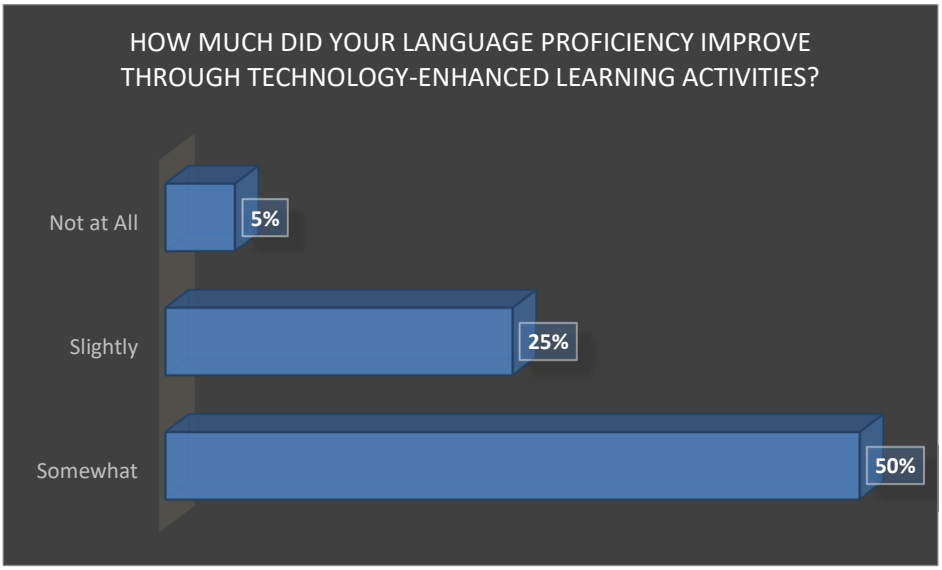


Figure 5

A2:

Twenty classroom observations were conducted to assess the integration of technology and its impact on student engagement.

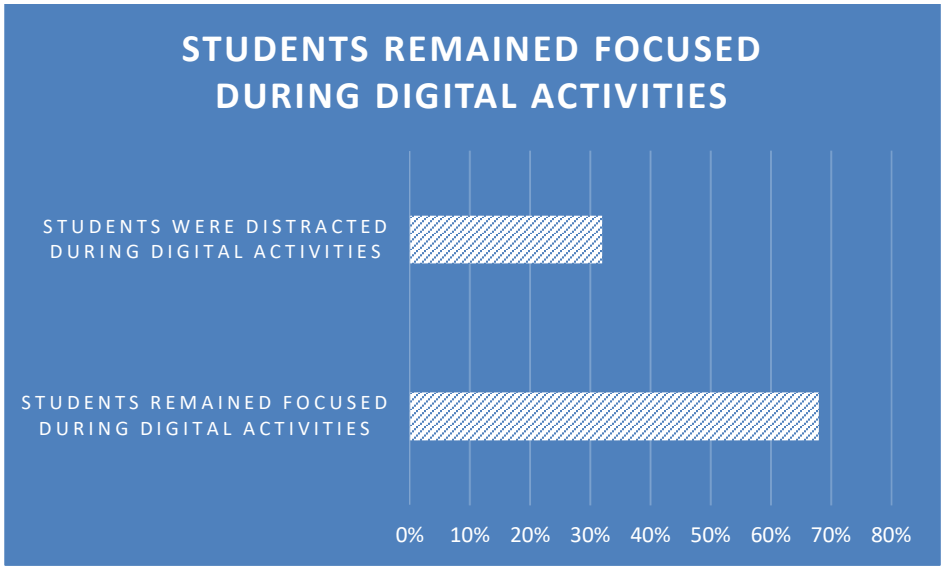


Figure 6

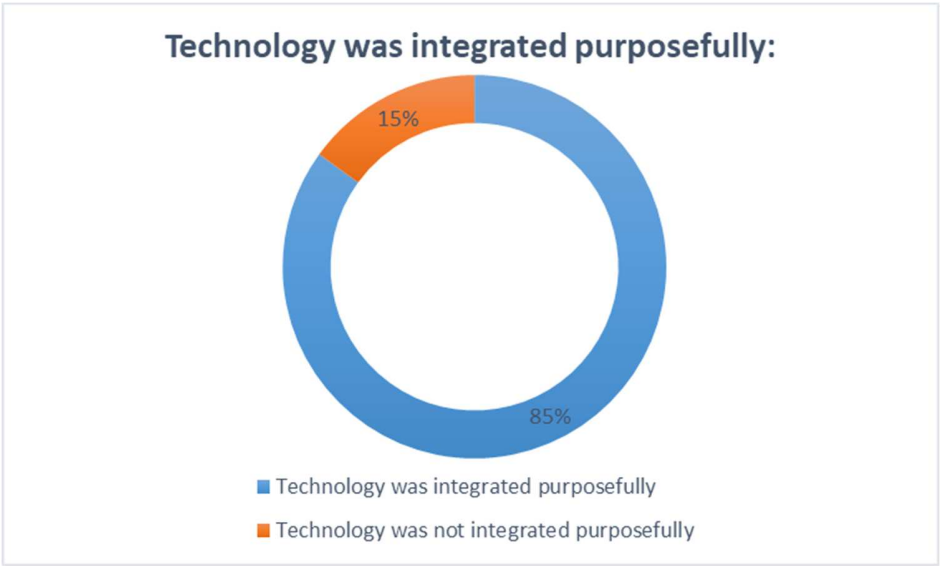


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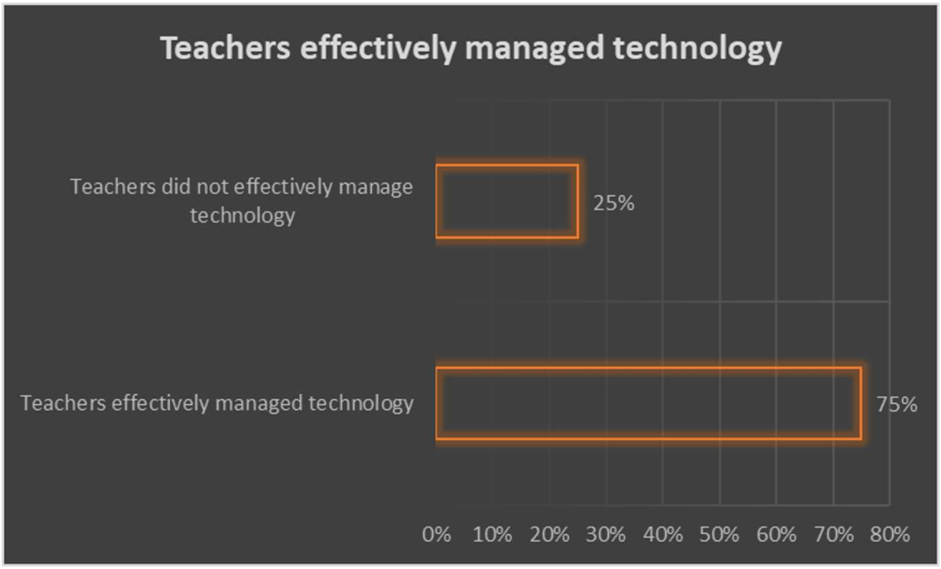


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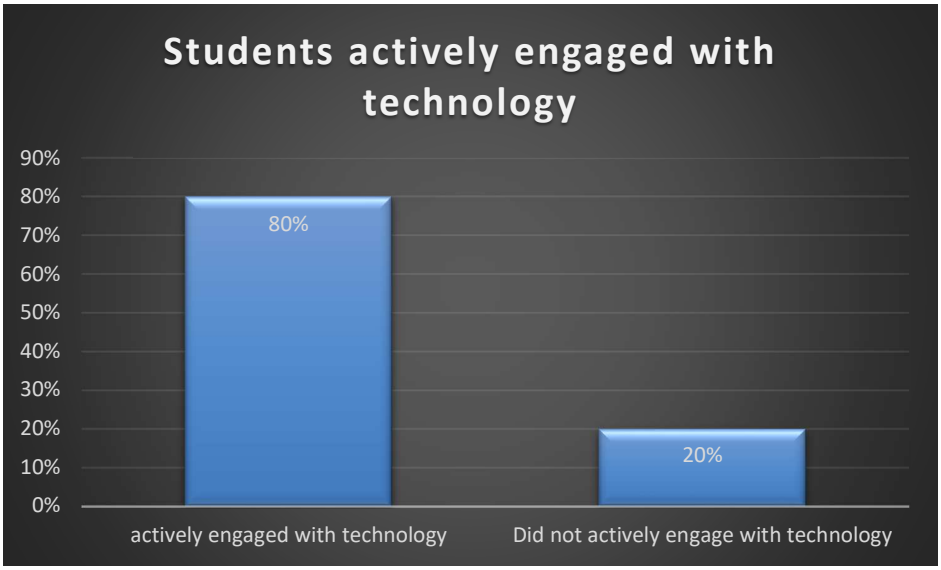


Figure 9

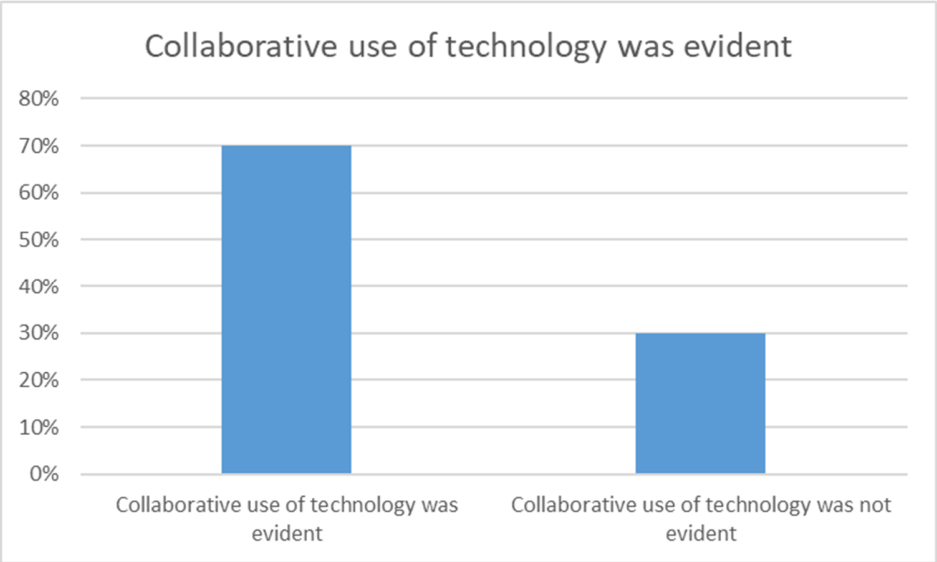

Collaborative use of technology was evident
80%
70%
60%
50%
40%
30%
20%
10%
0%
Collaborative use of technology was evident
Collaborative use of technology was not evident

Figure 10

A3:

3- Student Interview Themes:

From the 20 student interviews:

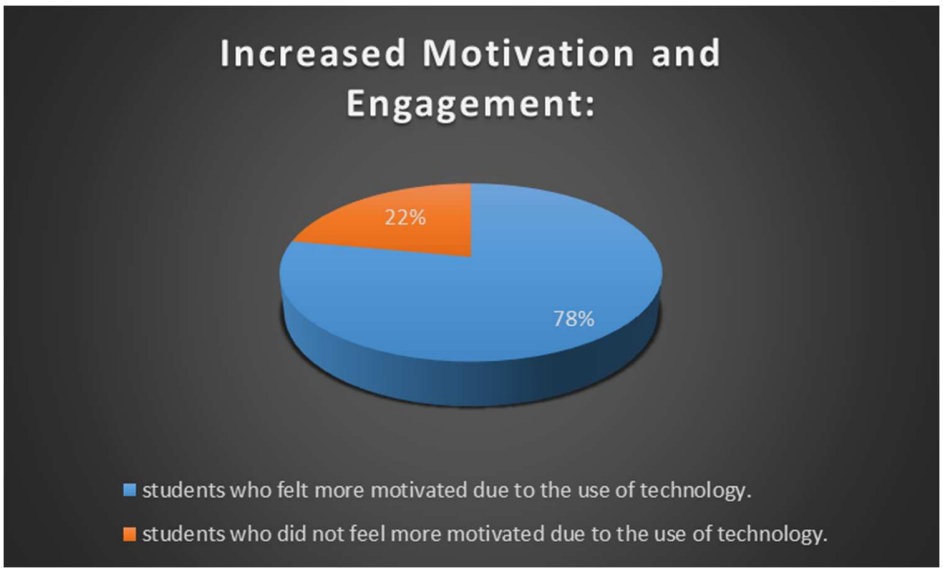


Figure 11

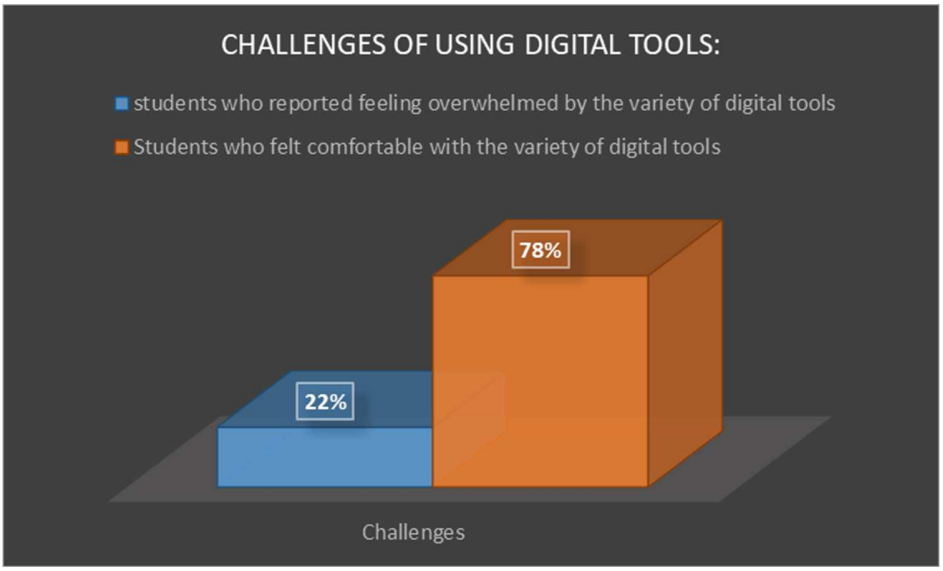


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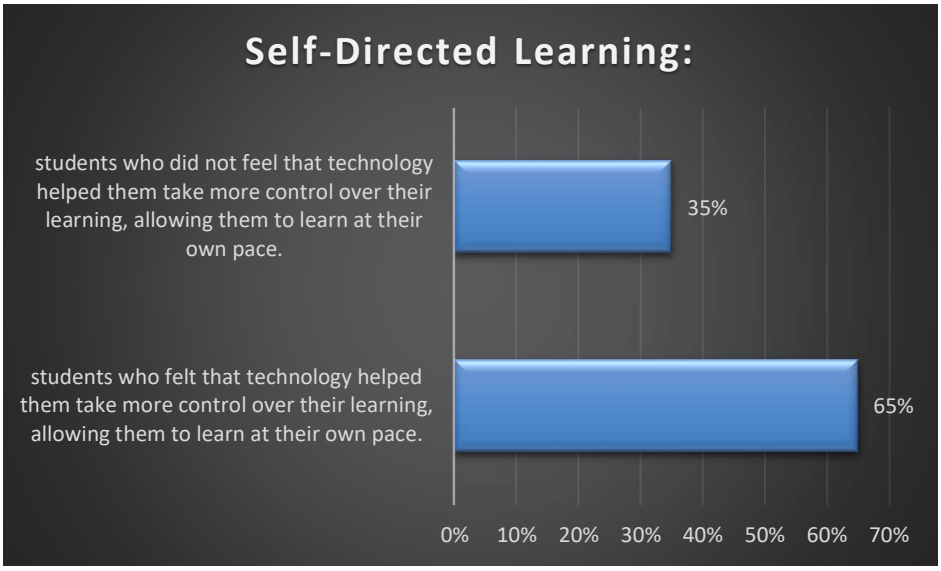


Figure 13

4- Teacher Interview Themes:

From the 10 teacher interviews:

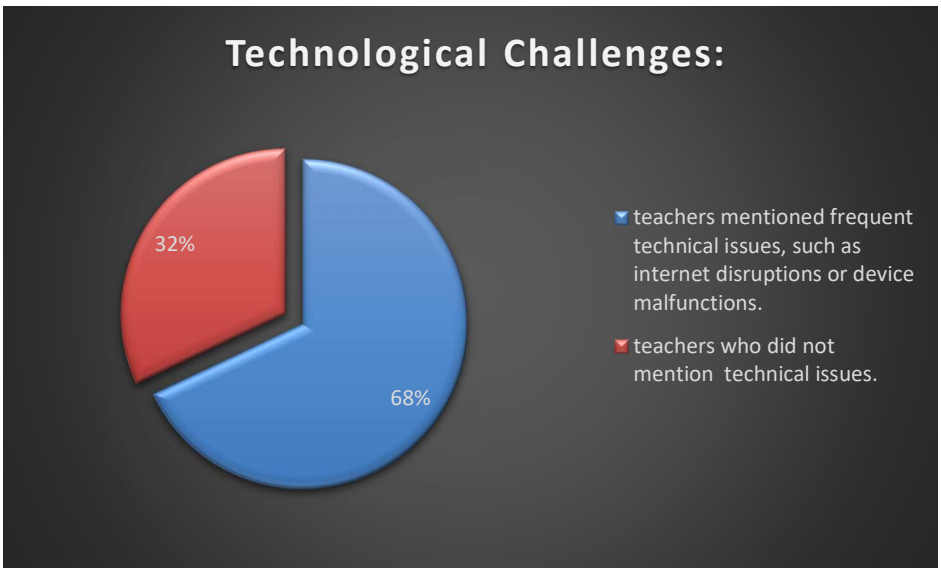


Figure 14

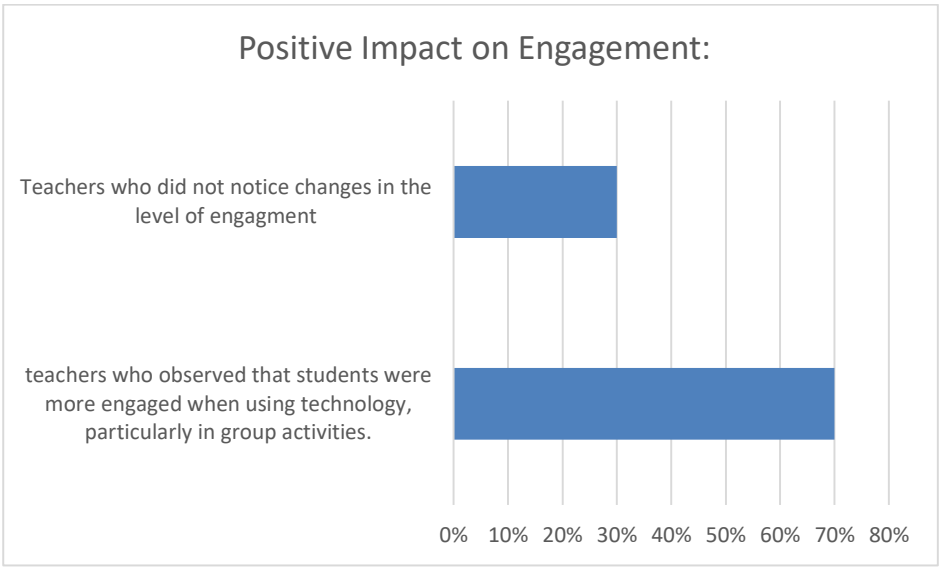


Figure 15

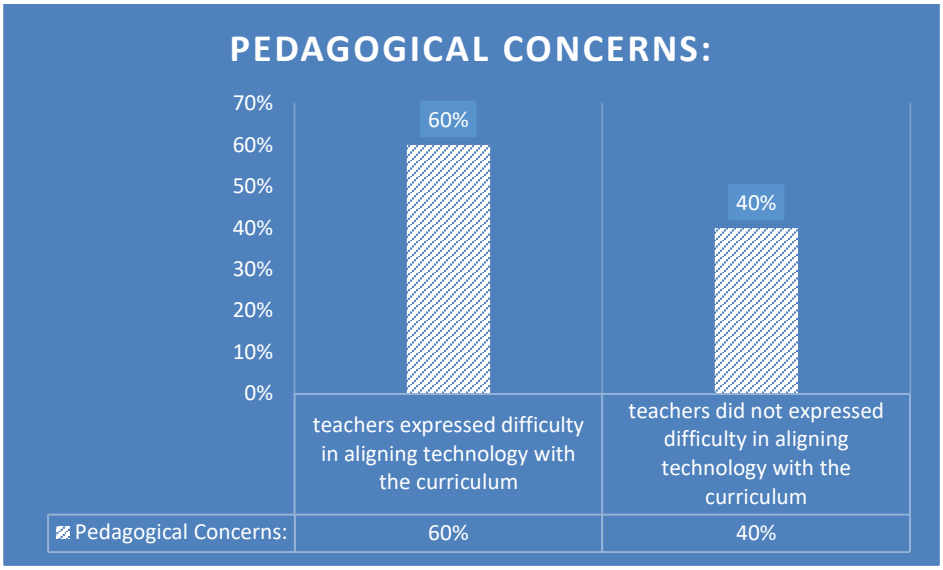


Figure 16