

BINDURA UNIVERSITY OF SCIENCE EDUCATION



FACULTY OF SCIENCE EDUCATION

DEPARTMENT OF EDUCATIONAL TECHNOLOGY

**THE EFFECTIVENESS OF TECHNOLOGY IN IMPROVING COMBINED
SCIENCE HOMEWORK SCORES AND LEARNER ENGAGEMENT AT
KENVILLE HIGH**

BY

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS OF THE DIPLOMA OF SCIENCE EDUCATION IN SCIENCES**

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ABSTRACT

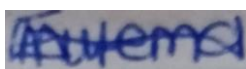
With the COVID-19 era passed, we are now living with the aftereffects of COVID-19. COVID-19 has come and gone but the aftereffects are still felt today because they have different sectors including education in using technology. We have seen penetration of technology in terms of ownership by individuals whereas in schools, technology adoption fell behind individual ownership trends. People have learnt new ways of doing things like teaching and learning technology within and outside the classroom to an extent that we have seen Kenville High being one of the schools using technology. However, the effectiveness of technology in this area remains understudied and research is beginning to uncover its impact especially in improving student engagement and homework performance. To achieve this we start follows mixed research method where qualitative and quantitative data was collected through online interviews and questionnaires that were distributed to Form 2 learners interviewed. To analyse the qualitative data, Microsoft excel 2016 was used to analyse data in form of tables and bar graphs. A sample of 20 learner respondents was selected through a purposive sampling method. From the findings of the study, it was noted that technology when used in doing activities, it helped students to develop digital skills that they lack and they are now able to share and discuss access content making them also core creators. Students have learnt that the teacher is not only the source of the information. The researcher observed that technology gave the voice to the voiceless because everyone was participating. On the side of the challenges, it is something that cannot be over emphasised with the economic situation we have in the country not all the students are able to own the technology, so they hotspot the information from the parents, sisters and relatives who at times when they give them, they give them with conditions probably limited time and limited usage of data making it kind of hindrance to the skill development of students. Students enjoy using this technology because digital students in as much as they may not be lacking the content but when it comes to learning with technology, it gives them motivation. These findings were go a long way and it recognise decision making when it comes to the decision making of infrastructure.

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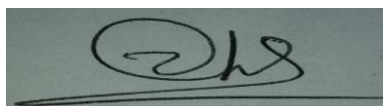
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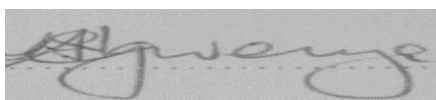
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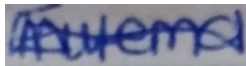
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DEDICATION

I dedicate my work to my family and friends. Special thanks to my loving parents Mr. S and Mrs. A. Mutema, my brother Taonga, Wellington Mutema and my sister Tanyaradzwa Mutema for their financial support.

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TABLE OF CONTENTS

Table of Contents

ABSTRACT.....	ii
RELEASE FORM.....	iii
APPROVAL FORM.....	iii
ACKNOWLEDGEMENT.....	v
DEDICATION.....	vi
LIST OF TABLES.....	x
TABLE OF FIGURES.....	xi
1 CHAPTER ONE: PROBLEM AND ITS SETTING.....	1
INTRODUCTION.....	1
BACKGROUND OF THE STUDY.....	1
STATEMENT OF THE PROBLEM.....	2
RESEARCH QUESTIONS.....	3
RESEARCH OBJECTIVES.....	3
SIGNIFICANCE OF THE STUDY.....	3
1.1.1 THE TEACHERS.....	3
1.1.2 THE RESEARCHER.....	4
1.1.3 THE STUDENTS.....	4
1.1.4 THE CURRICULUM DEVELOPERS.....	4
LIMITATIONS.....	4
DELIMITATIONS.....	5
DEFINITION OF TERMS.....	5
CHAPTER LAYOUT.....	6
CHAPTER SUMMARY.....	6
2 CHAPTER TWO: REVIEW OF THE RELATED LITERATURE.....	8
INTRODUCTION.....	8
THE IMPACT OF TECHNOLOGY ON STUDENT ENGAGEMENT.....	8
THE IMPACT OF TECHNOLOGY ON ACADEMIC PERFORMANCE.....	9
IMPACT ON HOMEWORK SCORES.....	10

NEGATIVE IMPACTS OF USING TECHNOLOGY	11
THE POTENTIAL OF USING TECHNOLOGY	12
CHALLENGES OF USING TECHNOLOGY	16
2.1.1 TECHNICAL CHALLENGES.	16
2.1.2 COGNITIVE CHALLENGES.....	17
2.1.3 PEDAGOGICAL CHALLENGES	17
2.1.4 SOCIO-EMOTIONAL CHALLENGES	18
CHAPTER SUMMARY	18
3 CHAPTER THREE: DATA COLLECTION / RESEARCH METHODS.....	20
INTRODUCTION.....	20
RESEARCH METHODOLOGY	20
RESEARCH APPROACH	20
3.1.1 QUALITATIVE APPROACH.....	20
3.1.2 QUANTITATIVE APPROACH.....	21
SAMPLE AND SAMPLING.....	21
3.1.3 SAMPLING TECHNIQUE	21
3.1.4 POPULATION	21
DATA COLLECTION METHODS.....	22
3.1.5 Focus Groups.....	22
3.1.6 THE ONLINE INTERVIEW SCHEDULE.....	22
DATA COLLECTION PROCEDURES	23
DATA ANALYSIS	23
ETHICAL CONSIDERATIONS	23
3.1.7 INFORMED CONSENT	23
3.1.8 CONFIDENTIALITY AND ANONYMITY	24
ASSUMPTIONS	24
3.1.9 CHAPTER SUMMARY	24
4 CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION.....	25
INTRODUCTION.....	25
CHARACTERISTICS OF THE LEARNERS.....	25
OWNERSHIP AND ACCESS OF TECHNOLOGY	25
ACCESS TO TECHNOLOGY	27
ONLINE RESOURCES USED IN LEARNING COMBINED SCIENCE HOMEWORK.....	28
USAGE OF RESOURCES BY F2 LEARNERS.....	29

4.1.1	LAPTOP USAGE	29
4.1.2	SMARTPHONES USAGE	29
4.1.3	WIFI USAGE	30
4.1.4	CELL PHONE USAGE	30
	EFFECTIVENESS OF USING TECHNOLOGY IN COMBINED SCIENCE HOMEWORK	31
	CHALLENGES FACED BY LEARNERS WHEN USING TECHNOLOGY	32
4.1.5	CONNECTIVITY PROBLEMS (POOR OR SLOW NETWORK).....	33
4.1.6	DISTRACTIONS SUCH AS OVER-RELIANCE ON TECHNOLOGY AND EYE STRAIN AND PHYSICAL HEALTH	33
4.1.7	LACK OF CLEAR INSTRUCTIONS AND LACK OF TECHNICAL SUPPORT	33
4.1.8	LACK OF CONTROL ON BUYING DATA BUNDLES AND LACK OF CONTROL ON TECHNOLOGICAL DEVICES	33
	STRATEGIES THAT CAN BE USED TO MAXIMISE PROBLEMS ENCOUNTERED WHEN USING TECHNOLOGY RESOURCES IN DOING COMBINED SCIENCE HOMEWORK.....	34
	CHAPTER SUMMARY.....	34
5	CHAPTER FIVE: SUMMARY, RECOMMENDATIONS AND CONCLUSIONS	36
	INTRODUCTION.....	36
	SUMMARY OF THE PROJECT	36
	CONCLUSIONS.....	37
	RECOMMENDATIONS	37
5.1.1	FOR TEACHERS	37
5.1.2	FOR STUDENTS.....	37
5.1.3	FOR PARENTS	38
5.1.4	FOR POLICYMAKERS.....	38
5.1.5	FOR SCHOOL ADMINISTRATION.....	38
	CHAPTER SUMMARY.....	38
6	REFERENCES.....	38
7	APPENDICES	41
	Appendix 1: STUDENT INTERVIEW GUIDE	41

LIST OF TABLES

Table 4-1: Demographic characteristics of the selected Form2 learners (n=20)	25
Table 4-2 Level of access to technology by F2 learners	27
Table 4-3 How often resources are used in doing combined science homework	29
Table 4-4 Likert Scale for Technology effectiveness	31
Table 4-5 Challenges faced by F2 learners when using technology in doing combined science homework	32
Table 4-6 Strategies adopted by F2 learners to maximise problems they face when using technology	34

TABLE OF FIGURES

Figure 4-1: Ownership of Devices by F2 Learners.....	26
Figure 4-2 Ownership of Devices by parents.....	27
Figure 4-3: Online platforms used by learners in doing combined science homework.....	28

1 CHAPTER ONE: PROBLEM AND ITS SETTING

1.1 INTRODUCTION

The effectiveness of technological strategies in enhancing combined science homework scores and promoting student engagement at Kenville High School is the focus of this research investigation. The chapter focuses on the background to the study, statement of the problem, objectives of the study, research questions, delimitations and limitations of the study, significance of the study, definition of terms and lastly the summary of the chapter.

1.2 BACKGROUND OF THE STUDY

Combined science involves various disciplines, including biology, physics and chemistry. With the quick development of technology, educational tools and resources have become increasingly accessible. This study aims to investigate the effectiveness of technology in facilitating combined science homework.

The integration of technology in education has become a vital area of research, particularly concerning its impact on student engagement and academic performance at Kenville High School. It has seen a rise in the use of technology to improve learning experiences, particularly in integrated scientific courses, like many other educational institutions. According to recent research, technology can direct a flexible and dynamic learning environment, which might boost student engagement and homework grades (Sharma et al., 2022; Wang et al., 2021).

Over the past decades, technology has emerged as a vital component of current society, transforming various aspects of human life. Technology has a positive impact on student learning because it encourages the students to be more engaged and motivates them to secure more information (Costley, 2018). Using technology has a significant impact on education applications and changed the way educators teach, how students learn, and the way students and teachers communicate (Storksdieck and Hunter, 2017). Technology provides meaningful learning experiences because of the appearance of new technologies rapidly occurring globally.

In combined science curricula, where concepts often combine physics, chemistry and biology, traditional teaching methods may not sufficiently engage students or facilitate a deep understanding (Higgins et al., 2020). The application of technology, including digital simulations, online collaborative tools and gamified learning platforms, could address this gap by providing students innovative ways to explore scientific concepts (Johnson and Adams, 2023). Research indicates that when students engage with technology, they are more likely to

participate actively in their learning processes, which connects with higher academic achievement (Rosalind et al., 2023). Moreover, tools that promotes collaborative learning can enhance peer interactions, leading to a more reliable understanding of complex scientific principles (Thompson and Becker, 2023).

In addition, incorporating technology into homework assignments has been found to encourage student engagement through activities that promote critical thinking and problem-solving skills. A meta-analysis by Tamim et al. (2011) highlighted that technology-enhanced learning environments positively correlate with heightened student achievement and satisfaction. Consequently, at Kenville High School, the focus on integrating technology into the combined science curriculum is expected to yield improved homework scores and foster an interest in the sciences, ultimately preparing students for future academic and professional pursuits in STEM (Science, Technology, Engineering, Mathematics) fields.

By analysing qualitative feedback from students regarding their engagement, this research aims to contribute to the broader understanding of technology's role in modern education. This research will provide valuable insights into the role of technology in enhancing combined science education at Kenville High School. By understanding its effectiveness in improving homework scores and student engagement, the findings can inform teaching practices and potentially lead to better educational outcomes.

1.3 STATEMENT OF THE PROBLEM

At Kenville High School, the combined science curriculum faces challenges related to student engagement and academic performance. Despite the widespread adoption of technology in education, there is a need to investigate the effectiveness in improving student outcomes, particularly in combined science. The problem is that even though the investment in technological tools and resources, there is lack of empirical evidence on the effectiveness of these interventions in improving combined science homework scores and students' engagement. This lack of evidence creates a significant gap in understanding the impact of technology on student outcomes in combined science. This research seeks to explore the relationship between technology integration, homework performance, and student engagement, ultimately aiming to provide insights that can guide future educational practices and policies.

1.4 RESEARCH QUESTIONS

- How does technology impacts student' engagement in combined science learning at Kenville High School?
- To what extent does technology improve combined science homework scores among students at Kenville High School?
- What are the factors that influence the effectiveness of technology in improving combined science homework scores and students' engagement at Kenville High School?

1.5 RESEARCH OBJECTIVES

The aims of the research are to:

- To investigate the impact of technology on students' engagement in combined science homework scores among students at Kenville High School.
- To collect qualitative data through interviews to understand students' perceptions of technology's role in learning.
- To compare the performance and engagement levels of students who utilize technology in their homework with those who rely on traditional methods of learning.

1.6 SIGNIFICANCE OF THE STUDY

The study is significant because it aims to contribute to the existing body of research on the effectiveness of technology in improving student outcomes, particularly in combined science. The findings of this study will provide valuable insights for the teachers, the students, the researcher and curriculum development seeking to harness the potential of technology to improve combined science.

1.6.1 THE TEACHERS

The study's findings will provide teachers with insights into the effective use of combined science education enhancing their professional development and enabling them to integrate technology more effectively into their teaching practices. The research may promote collaborative approaches among science teachers to share experiences and insights on technology integration.

1.6.2 THE RESEARCHER

The study is of great important to the researcher because she gained research skills by undertaking the research. It is also significant to the researcher as it highlighted the effectiveness of technology in enhancing combined science homework scores and students' engagement. The researcher also gained knowledge on the importance on the same area under study and this will also help to enhance the methods of con tent delivery by the learning in learning through technology.

1.6.3 THE STUDENTS

The research will help students when it is put in the library so that everyone can read it. Potential improvements in homework scores and engagement could lead to better overall academic performance and interest in science subjects. The study could highlight how customization of homework through technological platforms influences student effort and initiative.

1.6.4 THE CURRICULUM DEVELOPERS

Findings from the study can inform curriculum developers and educators about effective technology integration strategies, helping to align teaching resources with student needs. Identifying which technological tools and approaches yield the best results can assist in developing evidence-based practices for future science instruction.

1.7 LIMITATIONS

- i. The study's measures of homework scores and engagement may be subject to measurement error, which may affect the accuracy of the findings.
- ii. The study may be limited to a small group of form2 combined science students at Kenville High School, making it difficult to generalise findings to other schools or grade level.
- iii. Not all students may have equal access to technology at home, which could affect homework performance and engagement levels.
- iv. While technology can enhance learning, there is a risky of overwhelming students with too many tools or resources. This overload can lead to confusion or disengagement, which may negatively impact the study's outcomes.

1.8 DELIMITATIONS

The research is confined to form 2 students at Kenville High School doing combined science, which may limit the applicability of the results to other educational institutions. Factors such as school size, demographic diversity and availability of resources can vary significantly between schools, affecting the generalizability of the findings. The study is delimited to a specific academic semester of the year, which allows the researcher to focus on a specific time period. The research may concentrate on particular types of technology, such as online platforms or digital tools. This delimitation means that the findings will reflect the effectiveness of those chosen technologies rather than a broader range of available tools. The study may involve a specific number of 30 students which will be randomly selected from form 2.

1.9 DEFINITION OF TERMS

The terms used in the study are as defined below:

Technology

Refers to the application of scientific knowledge for practical purposes, particularly in the context of education. In this study, technology encompasses digital tools, software and online resources that facilitate learning, enhance teaching methods and improve student interaction with educational content.

Effectiveness

Refers to the degree to which a particular intervention, method or tool achieves its intended outcomes. In the context of this study, it assesses how well technology improves students' homework scores and enhances their engagement in combined science.

Homework Scores

Refers to the evaluations or grades assigned to students based on their performance on homework assignments. These scores reflect students' understanding of the material, their ability to apply concepts learned in class and their overall academic progress in combined science.

Combined Science

Refers to an educational curriculum that integrates multiple scientific disciplines, typically including biology, chemistry and physics into a single course or program. This approach allows students to explore the connections between different scientific fields and develop a comprehensive understanding of scientific principles.

Students' Engagement

Refers to the level of interest, motivation and active participation that students demonstrate in their learning activities. High levels of engagement are characterised by enthusiasm for the subject matter, willingness to participate in discussions. And commitment to completing assignments, which can lead to better academic outcomes.

1.10 CHAPTER LAYOUT

The study is organised into five chapters, each of which addresses a specific aspect of the research. Chapter one introduces the research topic and provides background information on the use of technology in education. Chapter two reviews the existing literature on the effectiveness of technology in improving student outcomes, particularly in combined science. Chapter three describes the research design, data collection methods, including surveys, interviews and observations and also methodology used in the study. Chapter four presents the findings of the study including the results and examines the relationships between the variables including the impact of technology on student engagement and academic achievement. Chapter five summarizes the main findings of the study, provides recommendations for future research and practice and also discuss the implications of the findings for educational practice.

1.11 CHAPTER SUMMARY

The introductory chapter has presented the background of the study, statement of the problem, significance of the study, research questions and objectives and outlined the study as a stronghold foundation in the building of the researcher. The next chapter will focus on the literature review to identify scholarly contribution in the area of the effectiveness of technology in enhancing combined science homework scores and students' engagement at Kenville High School.

2 CHAPTER TWO: REVIEW OF THE RELATED LITERATURE

2.1 INTRODUCTION

The research indicates that technology can significantly enhance students' homework scores in combined science. For instance, a study conducted by Smith et al., (2022) found that students who utilized digital platforms for science assignments scored on average, 15% higher than those who completed traditional paper-based assignments. This improvement is attributed to the interactive nature of digital tools, which allow for immediate feedback and personalised learning experiences.

2.2 THE IMPACT OF TECHNOLOGY ON STUDENT ENGAGEMENT

Student engagement is a critical factor influencing academic performance. A study by Kahn et al. (2020) highlighted that technology-integrated learning environments significantly increase student motivation and participation in science subjects. This is echoed in the work of Van Dijken et al. (2021), which indicated that gamified learning elements and virtual laboratories not only enhance engagement but also encourage collaborative learning among peers. Such collaborative technologies crafted a community of learners, fostering a deeper understanding of scientific concepts through shared inquiry. For instance, platforms that utilize artificial intelligence to adjust the difficulty of tasks based on student performance can keep learners motivated and involved (Johnson, 2023).

Numerous studies have supported the idea that overall student motivation and engagement in learning is enhanced by the implementation of instructional technology (Mo, 2011). More specifically, technology engages students behaviourally (more effort and time spent participating in learning activities); emotionally (positively impacting attitudes and interests towards learning) and cognitively (mental investment to understand content). Whether technology is integrated during class time or after school hours, students are given more opportunities to interact with instructors collaborate with peers and engage themselves in the learning process. Specific technology examples that have been shown to enhance student engagement include web-conferencing software, social networking sites and digital games (Schindler et al., 2017).

Engagement is a critical component of the learning process, influencing student motivation and then academic performance. Herrington and Parker (2016) highlighted that technology enhances student engagement through interactive and simulated learning experiences. In their research, they found that students who used simulations and virtual labs for science

assignments reported higher levels of interest and involvement in their homework tasks. Furthermore, a systematic review by Hamari et al. (2016) demonstrated that the process of incorporating game design elements like websites into learning- can result in increased student engagement. For instance, educational apps that combine competitive elements or collaborative features can encourage students to take a more active role in the homework and learning processes. The potential of using technology particularly online resources like WhatsApp, has shown promising results in enhancing both homework scores and student engagement in combined science at Kenville High School.

Technology can increase student engagement in combined science homework by creating an educational experience (Hwang et al., 2015). Online simulations, games and virtual labs can make complex scientific concepts more accessible and enjoyable for students (Kuhn et al., 2017). High levels of engagement are associated with better learning outcomes, as students manage to retain information more effectively when they are actively participating in the learning process (Baker et al., 2009).

2.3 THE IMPACT OF TECHNOLOGY ON ACADEMIC PERFORMANCE

A comprehensive, large collection of studies suggests that technology can significantly enhance academic performance. According to Hattie (2020), the use of technology in the classroom, when integrated effectively, positively impacts student achievement particularly in combined science. This matches with the findings of Lee et al., (2018), students who used digital tools for collaborative science homework and projects showed an average improvement of 15% in their homework scores compared to peers who relied only on traditional methods.

In connection with combined science, a study by Xu et al. (2019) indicated that the implementation of online platforms for homework allowed for immediate feedback and specialized learning experiences, resulting in higher engagement and improved academic outcomes. This indicates the potential for technology to cater to individual learning needs, which is particularly beneficial in a combined science curriculum where concepts from different scientific disciplines are integrated. Online platforms often incorporate adaptive learning technologies that adjust the difficulty of tasks based on individual student performance. This personalisation is particularly beneficial in combined science, where students may have varying levels of competence in different scientific areas.

Incorporating the use of several technological applications allows for students to participate in higher-order thinking, enhance communication, engage in collaborative problem-solving

activities and discussions, critically reflect on content and expand digital competencies (Schindler et al., 2017). Studies have compared differences in academic achievement between students who have been taught with technological enhancement (i.e. student lesson recordings and podcasts) and those who have been taught without it. The results demonstrated that students who learned academic content in the technology enhanced classroom increased upon those who learned the content without technology (Carle, Jaffee and Miller, 2009). Performance was better in the intervention group in all objectively graded assessments which include papers, midterm/final exam scores and individual assignments.

Moreover, technology supports personalized learning experiences. With adaptive learning technologies, educators can tailor instruction to meet individual student needs, allowing for differentiated learning paths that can enhance understanding and retention of material (Williams, 2023). Technology can also improve academic performance by providing students with access to a wealth of online resources, including educational websites, videos and simulations (Koehler and Mishra, 2020). Additionally, technology can facilitate personalized learning experiences, enabling students to learn at their own pace and in their own style (Hwang et al., 2020). Technology can also enhance student engagement and motivation, leading to improved academic performance (Kuhn et al., 2020).

2.4 IMPACT ON HOMEWORK SCORES

Research indicates that technology can facilitate a more interactive and engaging learning environment (Hattie, 2009). Platforms like WhatsApp provide immediate communication channels between students and educators, allowing for timely feedback on homework and collaborative learning experiences. A study by Akyol and Garrison (2011) found that online discussions can deepen understanding, which may lead to improved scores on assignments. When students can ask questions and exchange ideas in real-time, as facilitated by WhatsApp, they are likely to feel more supported and engaged in their studies. Additionally, integrating technology into homework assignments can make them more engaging and meaningful, leading to better academic outcomes.

One of the primary ways technology can improve homework scores is through personalized learning. Digital tools and platforms enable students to work at their own pace and receive immediate feedback on their performance (Hattie, 2019). This tailored approach can help identify areas where students struggle and provide targeted resources to improve understanding. Research has demonstrated that students utilizing adaptive learning

technologies often achieve better academic results compared to their peers relying solely on traditional methods (Feng and He, 2021). Thus, implementing technology at Kenville High School could lead to higher combined science homework scores.

2.5 NEGATIVE IMPACTS OF USING TECHNOLOGY

Technology, can also have a negative impact on homework scores if students became distracted by social media, email and other digital distractions (Hodges et al., 2020). Technical issues, such as connectivity problems or software glitches, hinder student progress. Students rely too heavily on technology and fail to develop critical thinking and problem-solving skills.

One significant issue is the potential for superficial learning. While technology provides instant access to information, students may be tempted to simply copy and paste answers without truly understanding the underlying scientific concepts (Carr, 2010). Relying on online resources for homework solutions can bypass the essential cognitive processes of critical thinking and problem solving, ultimately hindering the development of a profound understanding of scientific concepts. This reliance on readily available answers can hinder the development of a solid foundation in fundamental scientific principles.

Plagiarism and academic integrity. Plagiarism is a serious concern in the realm of academia, particularly given the rise of technology that facilitates easy access to information. At its core, plagiarism involves the unauthorized use of someone's work or ideas without proper attribution, thereby misrepresenting them as one's own (Purdue Online Writing Lab, 2021). The widespread availability of online resources and ease of digital sharing have increased the risk of students and researchers intentionally plagiarizing content, underscoring the importance of proper citation and academic integrity practices. This undermines the principles of academic integrity, which emphasize honesty, trust and responsibility within scholarly work (Davidson, 2017).

The use of technology platforms like WhatsApp has become increasingly prevalent in educational contexts particularly in facilitating collaboration and communication among students. However, while these platforms provide significant benefits in terms of improving academic performance such as combined science homework scores, they also raise concerns about eye strain and overall physical health. Eye strain often referred to as digital eye strain can occur when individuals engage in prolonged screen time without appropriate breaks (Hoffmann et al., 2020). Students using WhatsApp to discuss homework or collaborate on science projects may spend extended periods staring at their devices. Symptoms of eye strain

include discomfort, blurred vision and headaches which can detract from students' ability to engage effectively with their studies (American Optometric Association, 2021). To mitigate these issues, it is essential for students to take regular breaks, use proper lighting and adjust screen settings to reduce glare.

Moreover, while technology can foster academic improvement, excessive use can lead to sedentary behaviours that harmfully affect physical health. Engaging in screen time, such as using WhatsApp, often comes at the expense of physical activity, contributing to issues like obesity and poor attitude among students (O'Sullivan et al., 2019). Encouraging students to balance technology use with physical activity can help maintain their overall well-being while still leveraging the benefits of platforms like WhatsApp for academic purposes. By establishing guidelines and fostering healthy habits, Kenville High School can guide the positive aspects of technology while minimizing potential health risks associated with its excessive use.

Additionally, the distractions that technology can significantly slow down productivity, mental clarity and overall well-being, such as social media and online games can hinder students' focus and time management (Ravizza et al., 2016). When students split their attention between homework and distracting content, their overall academic performance tends to suffer (Kershaw, 2020). The lack of face-to-face interaction with teachers and peers when using technology for homework can result in adequate support and collaboration, which are key for deeper understanding (Baker, 2019). The absence of this social aspect may lead to feelings of isolation, decreased motivation and engagement with the subject matter (Garrison and Anderson, 2013).

2.6 THE POTENTIAL OF USING TECHNOLOGY

The potential of using technology particularly online resources like WhatsApp, has shown promising results in enhancing both homework scores and student engagement in combined science at Kenville High School. Technology improves students with access to resources and information, improved communication and collaboration, increases academic performance virtual labs and simulations, personalized learning and enhance access of the content.

Technology improves access to resources and information. Technological tools such as WhatsApp provide students with unprecedented access to a wealth of information and resources. Online databases, educational websites, and virtual labs allow student to research; scientific concepts through simulations and experiments that may be too costly or dangerous to perform in traditional classroom setting (Tinker and Papert, 2016). For example, resources

like PHET Interactive Simulations allow students to visualize complex concepts in combined science, enhancing their understanding (Wieman et al., 2010). WhatsApp also provide students with access to a wealth of online resources, including educational websites, videos and tutorials. This can enable students to explore complex scientific concepts in a more engaging and interactive way.

However, technology also improves communication and collaboration to combined science students. Technology facilitates collaboration among students through discussion boards and group projects in virtual environments. Working together can enhance understanding and retention of scientific concepts, leading to improved scores. Online resources like WhatsApp can facilitate enhanced communication between teachers and students, enabling them to discuss homework assignments, ask questions and receive feedback in real-time (Kukulska-Hulme, 2012). This can lead to improved understanding and completion of homework assignments. In addition, WhatsApp can also facilitate collaboration and peer support among students, enabling them to work together on homework assignments, share resources and provide feedback (Johnson et al., 2014). This can lead to improved teamwork, communication and problem solving skills.

Another advantage of using technology in education is its ability to address diverse learning needs and styles. Technology can provide alternative learning modalities, such as videos and interactive content that cater to visual, auditory and kinaesthetic learners (Mayer, 2019). Kenville High School's teachers can utilize such technology to differentiate instruction, ensuring all students receive adequate support and resources tailored to their learning preferences. This inclusivity can lead to overall better performance and increased confidence in completing homework assignments. The ability to access diverse materials enhances their learning experience and equips them with critical research skills for future academic endeavour.

Technology also plays a crucial role in enhancing student engagement. Interactive platforms and resources such as simulations, virtual labs and gamified learning experiences, capture students' attention more effectively than traditional textbooks (Gee, 2018). Engaged students are more likely to participate actively in their learning and show higher motivation levels, leading to improved academic performance. For example, incorporating virtual labs in science education allows students to conduct experiments virtually, which not only sparks interest but also fosters a deeper understanding of scientific concepts (De Smet et al., 2020). Interactive

online activities, personalized pathways, and opportunities for collaborative work can increase student engagement and motivation.

The potential of technology in combined science learning and teaching remains largely untapped. Moving forward, Artificial intelligence (AI): AI-powered tools can provide personalised feedback automate grading and identify students at risk of falling behind. AI driven learning platforms could revolutionize personalized learning paths. Adaptive learning Platforms use algorithms to adjust the difficulty of content based on student performance, providing a truly personalized learning experience. Investing in the research and development of high-quality adaptive learning platforms is essential. WhatsApp allows for immediate feedback from peers and teachers. Students can ask questions and receive answers quickly, which helps to clarify misunderstandings before they become obstacles to learning.

The use of technology in education allows personalized learning experiences tailored to individual student needs. Adaptive learning platforms can assess a student a student's understanding of scientific concepts and provide customized content accordingly (Kerr and McCormick, 2008).Technology enables teachers to personalize learning experiences to meet the individual needs of each student. Learning, Management systems (LMS) can track student progress, identify areas of difficulty and provide targeted support. This allows students to learn at their own pace and focus on areas where they need the most help. (In-text: Tech Trends in Education, 2022).Research suggests that blended learning can lead to improved learning outcomes compared to face-to-face instruction alone. A meta-analysis of blended learning effectiveness (Source: [Educational Research Review, 2021]) found that blended learning approaches were associated with significantly higher student achievement.

Enhancing access to content is a critical aspect of using technology in education. When technology is integrated into the learning process, it can provide students with equal access to high-quality educational resources, regardless of their geographical location or socio-economic background (Koehler and Mishra, 2020). This can be particularly beneficial for students who may not have access to these resources. One of the primary ways that technology enhances access to content is through online learning platforms and educational websites (Hwang et al. 2020). These platforms provide students with access to a wealth of educational resources, including videos, simulations and interactive tutorials. This can help to supplement traditional teaching methods and provide students with a more engaging and interactive learning experiences.

The ownership of gadgets by students in school is a crucial aspect of using technology in education. When students have ownership of their gadgets, they are more likely to take of them and use the responsibility (Koehler and Mishra, 2020). This sense of ownership can also lead to increased motivation and engagement, as students feel more invested in their learning. One of the primary benefits of student-owned gadgets is that they can provide equal access to technology for all students, regardless of their socio-economic background. This can help to bridge the divide and ensure that all students have the opportunity to develop the digital skills they need to succeed in the 21st century.

Student-owned gadgets can also facilitate personalized learning experiences, as students can use their devices to access a wealth of online resources and educational materials. This can help to cater to different learning styles and abilities, and provide students with a more engaging and interactive learning experiences. In addition to providing equal access and facilitating personalized learning, student-owned gadgets can also help to develop important digital citizenship skills (Koehler and Mishra, 2020). As students use their devices to access online resources and communicate with their peers, they need to learn how to navigate the digital world safely and responsibly. Overall, the ownership of gadgets by students in school is an important aspect of using technology in education. By providing equal access, facilitating personalized learning, and developing digital citizenship skills, student-owned gadgets can help to enhance the learning experience and prepare students for success in the digital age.

Technology increases accessibility to education by providing students with disabilities or limited access to physical labs with equal access to learning resources and opportunities (Rose et al., 2020). Additionally, technology can also enables students to learn remotely, reducing barriers to education and provide students with access to online resources and support services, which can help to level the playing field and promote equity in education (Warschauer, 2020). Virtual labs and simulations can increase accessibility to educational resources for students with disabilities or limited access to physical labs (Rose et al 2005). This can enable all students to participate fully in combined science homework and learning activities. Online homework platforms and mobile apps can provide equal access to learning materials and opportunities for students with diverse needs.

2.7 CHALLENGES OF USING TECHNOLOGY

While the potential and impact of using technology in combined science homework are significant, there are also challenges that need to be addressed. One of the main challenges is the digital divide, which refers to the gap between students who have access to technology and those who do not have. This can create inequities in learning opportunities and hinder the effectiveness of technology-based homework assignments. Another challenge is the need for professional development of teachers and lastly, there is need to ensure the privacy and security of student data, as well as to address issues related to screen time and the potential of distractions.

Teachers need to be trained and supported in the use of technology to ensure that they can effectively integrate it into the homework assignments. As noted by Ertmer and Ottenbreit-Leftwich (2010), teacher readiness and comfort with technology are crucial factors that influence successful integration. Teachers at Kenville High School would require adequate professional development and ongoing support to effectively utilize these tools in their instructional practices. It is crucial for teachers to receive professional development focusing on how to effectively integrate these tools into their lesson plans and homework assignments. This training emphasized the importance of using technology to enhance understanding and encourage active learning in combined science.

2.7.1 TECHNICAL CHALLENGES.

Students may experience connectivity issues, such as slow internet speeds or unreliable connections, which can hinder their ability to access online resources and complete homework assignments. The issue of equity and access, as not all students have equal access to digital devices, slow loading times and internet connectivity (Hodges et al., 2020). This can lead to a digital divide where some students from low-income and students of colour, are unable to complete homework assignments or access online resources, thereby exacerbating existing achievement gaps (Koehler and Mishra, 2020). Moreover, connectivity issues can also affect the quality of video conferencing, online lectures and virtual labs (Johnson et al., 2020). It is vital for Kenville High School to ensure all students have equitable access to technology resources to facilitate improved engagement and performance in combined science.

However, hardware and software issues are the challenges of using technology in increasing combined science homework scores. Students may encounter hardware and software issues such as outdated devices, laptops and mobile devices as well as insufficient storage capacity

and processing power which can prevent them from accessing digital tools and resources (Kirschner and van Merriënboer, 2013). This can lead to difficulties in running educational software, accessing online resources and completing assignments. Technical support is another challenge, as teachers and students may require assistance with troubleshooting technical issues, setting up equipment and learning new software (Ertmer and Ottenbreit-Leftwich, 2020). Insufficient technical support can lead to frustration and decreased motivation to use technology.

2.7.2 COGNITIVE CHALLENGES

While technology can enhance combined science homework, over-reliance on it can have negative consequences, including distractions, decreased motivation and diminished critical thinking and problem-solving skills (Bok, 2018). To maximise the benefits of technology, a balanced approach that combines traditional teaching methods with technological tools is necessary. Moreover, excessive exposure to digital information can lead to information overload, making it challenging for students to navigate and process the vast amount of data available.

Using technology to improve combined science homework scores can lead to distractions for students. Students may become side-tracked by social media, email or other digital tools (Kirschner and van Merriënboer, 2018). Students may also be distracted by social media which can decrease their focus and productivity when completing homework assignments. The overwhelming amount of online information can cause cognitive overload, leading to frustration and decreased motivation to complete their homework effectively. While researching for homework, students may find themselves side-tracked by unrelated content, which can detract from their study time and negatively impact their homework scores.

2.7.3 PEDAGOGICAL CHALLENGES

Lack of clear instructions is another pedagogical challenge faced by students when using technology to improve their homework scores. Students may struggle with unclear or inadequate instructions for using digital tools and resources which can lead to frustration and confusion (Hwang et al., 2015). When teachers provide instructions solely through digital means such as online portals or learning management systems, students may misinterpret or overlook crucial details (Koehler and Mishra, 2020). This can result in students submitting incomplete or incorrect assignments, ultimately affecting their scores.

During the use of technology, students may receive limited feedback on their performance when using technology, which can make it difficult for them to track their progress and identify areas for improvement (Black and William, 2010). Technology can also limit the quality and timeliness of feedback, leading to confusion and frustration among students (Kuhn et al., 2020). When teachers rely solely on automated grading systems or digital comments, students may not receive the guidance they need to improve their understanding of complex scientific concepts.

2.7.4 SOCIO-EMOTIONAL CHALLENGES

Using technology also causes anxiety and stress. Students may experience anxiety and stress when using technology, particularly if they are not familiar with digital tools or are concerned about their ability to complete homework assignments (Koedinger et al., 2013). Technology can also exacerbate time management issues, leading to increased stress and anxiety among students (Kuhn et al., 2020). With the constant availability of digital distractions, such as social media and email notifications, students may struggle to stay focused and manage their time effectively. The use of technology in education can also create a fear of failure among students. Students may worry about submitting incorrect answers, receiving low grades, or failing to meet expectations, leading to increased anxiety and stress levels.

Technical issues such as connectivity problems and hardware malfunctions can cause frustration and anxiety among students (Hodges et al., 2020). When students encounter technical difficulties, they may feel overwhelmed and stressed, ultimately affecting their ability to complete assignments and submit them on time. The use of technology in education can also foster comparison and competition among students. When students can easily compare their grades and performance with their peers, they may feel pressure to perform better, leading to increased anxiety and stress levels. When students lack face-to-face interaction with teachers, they may feel isolated and unsupported, ultimately affecting their mental health and well-being.

2.8 CHAPTER SUMMARY

The literature review has highlighted the potential of technology to improve student performance and engagement in combined science, particularly through its application in homework assignments. The chapter also shed light on the possible suggestions that if taken into consideration, may help to better use of technology in improving combined science

homework scores. The following chapter will outline the methodology used to investigate the impact of technology on homework scores and student engagement at Kenville High School.

3 CHAPTER THREE: DATA COLLECTION / RESEARCH METHODS

3.1 INTRODUCTION

This chapter focused on the research design and methodology. The research approach, population and sampling techniques, methods used for data collection, data analysis, ethical considerations and chapter summary.

3.2 RESEARCH METHODOLOGY

Is the specific procedures or techniques used to identify, select, process and analyse information about the topic and it's important for the reader for critically evaluating a study overall validity and reliability (Muruthy and Yamim, 2017). Research methodology outlines the procedures and techniques used to conduct a study, detailing how data was collected and analysed.

3.3 RESEARCH APPROACH

The researcher adopted a mixed research approach to explore students' views towards the effectiveness of technology in enhancing combined science homework scores and students' engagement at Kenville High School. The mixed-methods design allows for a comprehensive understanding of the experiences by integrating both quantitative and qualitative data (Creswell & Plano, 2018). The study compared the homework scores and engagement levels of students who used technology-enhanced homework with those who used traditional homework.

3.3.1 QUALITATIVE APPROACH

Qualitative research is a methodology that focuses on gathering and analysing non- numerical data to gain a deeper understanding of a research phenomenon (Denzim and Lincoln, 2016). This approach is particularly useful for exploring complex, context-dependent issues, where the researcher seeks to uncover the attitudes and experiences of students regarding the use of technology in combined science homework and to identify the factors that influence its effectiveness. Qualitative research involved interviews and focus groups to gain insights into student perceptions of technology's role in enhancing learning. The qualitative research approach was chosen for this study because it allows for an in-depth exploration of the research phenomenon, taking into account the social, cultural and environmental factors that influence the participants, experiences. Overall, the qualitative research was well-suited for this study, as it enabled the researcher to gain a deeper understanding of the complex issues surrounding the use of technology in combined science.

3.3.2 QUANTITATIVE APPROACH

The quantitative component involves the collection and analysis of numerical data to determine any statistically significant improvement in students' homework scores following the integration of technological tools (for example learning apps, virtual labs, and educational platforms such as google Classroom or Kahoot). A quasi-experimental design was used comparing two groups of students: one that receives technology-integrated homework support and another that follows traditional methods. Statistical methods such as paired t-test were employed to analyse the data, ensuring that any improvements can be attributed to the use of technology.

3.4 SAMPLE AND SAMPLING

Lions (2014) highlight that selected group of some elements from the totality of the population is known as the sample. The assumption is that what is revealed about the sample will be true about the population as a whole (Zbourn and Farrah, 2021). Sampling is the process of selecting a sample from the population. Sampling refers to the process of selecting a portion of the population to represent the entire population. Rusu and Tudose (2018) defines sampling as a selection of participants who are subject to test and findings generalized to the population. The goal of sampling is to obtain a representative sample that accurately reflects the characteristics of the population.

3.4.1 SAMPLING TECHNIQUE

In this study, the purposive sampling technique was used in order to have combined science learners as the sample. A purposive sampling technique is a non-probability approach that concentrated on particular features or traits and deliberately chose participants. This method was used to choose students for both focus groups and online interviews. The objective was to include those who had different experiences with both standard and technology-enhanced homework. Purposive sampling has the advantage of enabling the researcher to obtain specific and relevant information.

3.4.2 POPULATION

The participants in this study were students from form 2 enrolled in the combined science program at Kenville High School. A sample of 20 students divided into 2 groups which are: experimental group with 10 students who were using technology for their combined science homework and control group with 10 students who were not using technology.

3.5 DATA COLLECTION METHODS

Data was collected using a combination of focus groups and online interviews.

3.5.1 Focus Groups

A focus group is a research instrument used to collect data through a group discussion led by a moderator (Krueger and Casey, 2015). Focus group discussion is a type of qualitative research that involves asking participants about their perceptions, attitudes, beliefs, opinions or ideas (Rusu and Tudose, 2018). Focus groups are often used to gather data on attitudes, opinions and experiences and can be used to explore topics in-depth.

Focus groups were conducted with students to gather qualitative data on their perceptions and experiences with technology in combined science homework. The groups were divided into 2 which are experimental and control group. The experimental group with students who was using technology and control group of students who was not using technology for their combined science homework. Focus groups plays a crucial role in enabling participants to talk freely with other group members. This method allows for a rich understanding of student perspectives, providing a platform for shared experiences.

3.5.2 THE ONLINE INTERVIEW SCHEDULE

An interview schedule is a tool that contains a pre-determined set of questions that serve as a guide for interviews to gather data on a specific topic or issue (Luenendonk, 2019). According to (Bryman, 2016), an interview schedule is a detailed plan outlining the questions and topics to be covered during an interview. It serves as a guide for the interviewer, ensuring that all necessary information is collected and structured. A well- designed interview schedule is essential for collecting high-quality data and achieving the research objectives.

Online interviews were conducted to gather in-depth information from students about their experiences with using technology for combined science homework. The interviews were conducted using WhatsApp messages and audio recordings to allow for real-time communication and interaction. . The researcher used interviews for collecting data because the research was a qualitative research and semi-structured interview questions. The interview schedule for this study were semi-structured, allowing for flexibility and follow-up questions. By utilizing a standardised questionnaire, the interviewer maintained consistency in data collection, enabling a more accurate comparison and analysis of responses across all participants.

When it comes to improving combined science homework scores and students' engagement, online interviews can be an effective research instrument. By conducting online interviews with students, researchers can gain insights into their understanding of scientific concepts, their study habits and their attitudes towards science homework. This information can then be used to develop targeted interventions to improve students' homework scores and engagement. By eliminating the need for in-person meetings, online interviews provide greater flexibility and convenience for participants, leading to higher response rates (Bampton and Cowton, 2013; Evans and Mathur, 2015). Moreover, the anonymity of online interviews can foster a sense of comfort and trust, encouraging participants to share more candid and personal insights.

3.6 DATA COLLECTION PROCEDURES

Data was collected through online interviews. A purposive sampling strategy was used to recruit participants for the online interviews. Students who are currently enrolled in combined science form2 class and have access to technology devices such as tablets and smartphones were invited to participate. A semi-structured interview protocol was used to guide the online interviews. Academic performance data was collected from school records, comparing scores before and after the introduction of these technologies. Focus group interviews were conducted with a subset of students to gather qualitative insights into their experiences and perceptions of using technology in their science homework.

3.7 DATA ANALYSIS

The data collected from the focus groups and online interviews provided rich insights into the effectiveness of technology in enhancing combined science homework scores and students' engagement. The researcher analysed the qualitative data using thematic analysis, a method that involves identifying, coding, and categorizing patterns and themes in the data.

3.8 ETHICAL CONSIDERATIONS

3.8.1 INFORMED CONSENT

The researcher ensured that informed consent was obtained from participants and their guardians, before participating in the study, ensuring that they understand the study's purpose and their right to withdraw at any time. Informed consent involves providing participants with clear information about the study's procedures, risks and benefits allowing them to make an informed decision about their participation.

3.8.2 CONFIDENTIALITY AND ANONYMITY

Confidentiality will be maintained by anonymizing data and securely storing all information collected ensuring that no personal identifying information is linked to responses when reporting results. Qualitative data will be subjected to member checking, where participants review findings to confirm accuracy.

3.9 ASSUMPTIONS

The research is based on several assumptions that underpin the research design and methodology. The researcher assumed that students at Kenville High School have access to devices and internet connectivity outside of school hours, which enables them to use technology for homework purposes. It is also assumed that technology used in the study, such as online learning platforms and educational software, is effective in enhancing student learning outcomes. Finally, it is assumed that data collected through online interviews and focus groups is reliable and valid, and the participants respond honestly and accurately to the questions. By acknowledging these assumptions, the researcher can better understand the limitations of the study and take steps to address potential biases and threats to validity.

3.9.1 CHAPTER SUMMARY

This chapter highlighted the methodology used to investigate the effectiveness of technology in enhancing combined science homework scores and student engagement at Kenville. The next chapter will focus on data presentation, interpretation and analysis.

4 CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

This chapter presents the study's results, based on interviews with combined science learners. The findings will be analyzed and discussed in relation to the research objectives, ensuring the results are interpreted accurately and meaningfully.

4.2 CHARACTERISTICS OF THE LEARNERS

This section describes the demographic profile of the learner respondents.

Table 4-1: Demographic characteristics of the selected Form2 learners (n=20)

Characteristics	Categories	(n)	(%)
Sex	Females	13	65
	Males	7	35
Age	12-13	4	20
	14-15	15	75
	16-17	1	5
	18 and above	0	0

Table 4-1 shows the demographic characteristics of twenty (20) selected Form 2 (F2) learners, classified by age and sex. From the selected combined science learners, the majority (65%) were female and the minority (35%) were males. The researcher noted that the age distribution shows that 20% of learners were between 12-13years old. Most learners fall within the 14-15age range accounting for 75% of the total, with 15 learners. The 16-17 age group is the smallest, with only 1 learner (5%).Notably, there are no learners aged 18 or above.

4.3 OWNERSHIP AND ACCESS OF TECHNOLOGY

Given the fact that there is shortage of technological infrastructure in schools, the costs associated with technological devices such as laptops, Smartphones and IPads have been pushed to the parents in the form of Bring your Own Device (BYOD) Approach. This has seen homework being given to learners through various forms such as WhatsApp, Emails, and Google Classroom amongst others. This motivated the study to investigate whether the devices being used by learners were owned in person or by parents or other people in their families. This would allow the researcher to understand the challenges and opportunities that these

people face in the process. As such, a question was asked on the ownership of the devices and the results are as indicated in Figure 4-1.

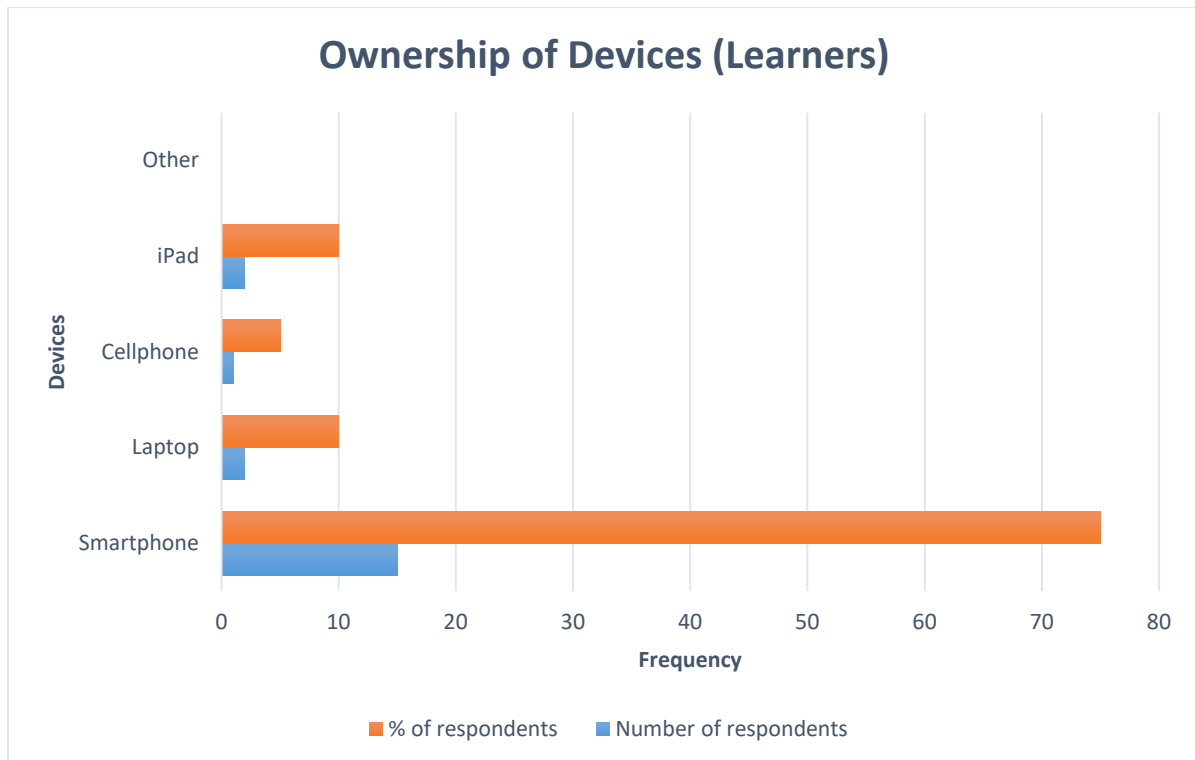


Figure 4-1: Ownership of Devices by F2 Learners

Figure 4-1 reflects on the ownership of devices by learners in F2. The devices included iPads, Cellphone, Smartphone, Laptop and others. The results in Figure 1 shows that about 15 respondents, which accounts for 75% of the total respondents owned smartphones. This indicate that the majority of learners own Smartphones. However, the specific types of these was not important for the study. Hence, that detail was not captured. On the other hand, the rest of the respondents owned iPads (10%), Cellphone (5%), and Laptops (10%). It was found that the top devices that were owned by learners did not include the Cellphone since it does not give access to the internet. Doing research would be near impossible with such a device. However, the study acknowledges that, there are still some people who own it because the economical and background status cannot be controlled. Many factors do come to play this regard. As such, the finding showed the unequal distribution of devices in learners, reinforcing the digital divide of the haves and do not haves.

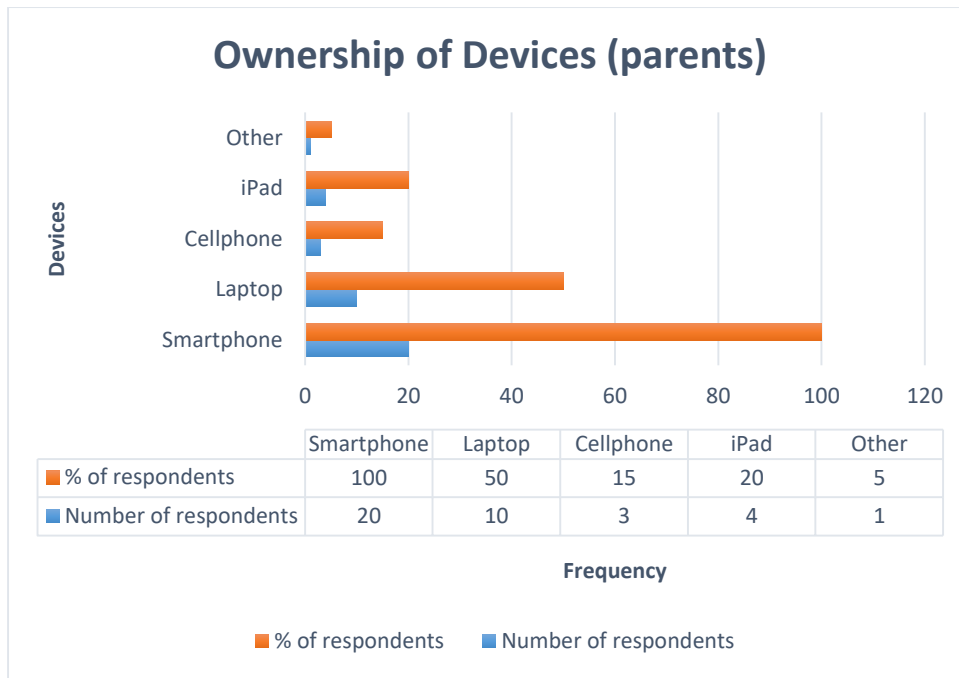


Figure 4-2 Ownership of Devices by parents

The results based on 20 participants, are presented in the table. The data shows that every respondent (100%) reported that their parents own a smartphone, indicating that smartphones are common among the parents of the students interviewed. However, laptops are owned by the parents of half of the respondents (50%), while iPads are owned by 20% of the parents. A smaller percentage of the parents own cellphones (15%) or other devices (5%). The findings suggest that smartphones are the most common device among the parents of combined science students, with other devices being less frequent.

4.4 ACCESS TO TECHNOLOGY

Table 4-2 Level of access to technology by F2 learners

Device	Yes		No	
	(n)	(%)	(n)	(%)
Smartphone	20	100	0	0
Cellphone	10	50	10	50
Laptop	12	60	8	40
iPad	15	75	5	25
Other	0	0	0	0

Table 4-2 reflects on the level of access to various technological devices among a group of twenty (20) learners. The devices included iPads, Cellphone, Smartphone, Laptop and others. The results in Table3 shows that about 100% of the total respondents have access to smartphones. This indicate that the majority of learners own Smartphones. However, the specific types of these was not important for the study. Hence, that detail was not captured. On the other hand, the rest of the respondents owned iPads (75%), Cellphone (50%), and Laptops (60%). Lastly, no participants reported using other types of devices, as both the Yes and No counts for the other category and zero.

4.5 ONLINE RESOURCES USED IN LEARNING COMBINED SCIENCE HOMEWORK

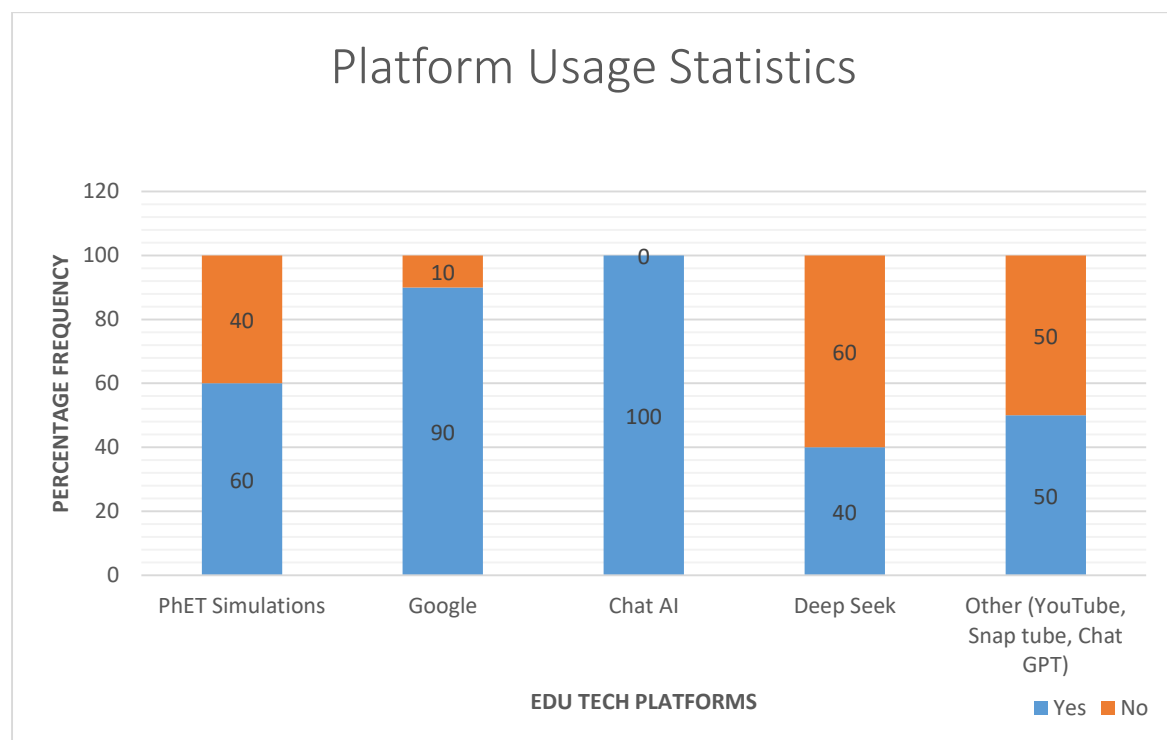


Figure 4-3: Online platforms used by learners in doing combined science homework

Figure 4-3 shows the results of an interview conducted among the selected form2 learners. The analysis explored the platforms used by the twenty (20) selected Form2 (F2) learners to do homework in combined science. The platforms include PhET Simulations, Google, Chat AI, Deep Seek and other (You tube, and Snap tube). The yes category indicates the number of respondents who reported using each tool, while the no category represents those who did not use the tool. The results revealed that Chat AI was the most popular tool, with nearly 100% of respondents indicating they used it. However, PhET Simulations received a relatively lower

approval rating, with around 60% of respondents saying they used it and approximately 40% indicating they do not use it. Deep Seek had fewer users, with only 40% used it and 60% did not use it. The researcher observed that some platforms like Chat AI, are highly effective in engaging students and improving their performance in combined science, while others may require more improvement.

4.6 USAGE OF RESOURCES BY F2 LEARNERS

Table 4-3 How often resources are used in doing combined science homework

Item	Question	Never		Sometimes		Neutral		Often		Always	
		(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
1	Laptop	10	50	3	15	4	20	1	5	2	10
2	Smartphone	0	0	0	0	0	0	0	0	20	100
3	Wi-Fi	2	10	1	4	3	15	3	15	11	55
4	Cellphone	4	20	1	5	12	60	3	15	0	0
5	Others	0	0	0	0	0	0	0	0	0	0

4.6.1 LAPTOP USAGE

The researcher observed that laptops are not widely used by students for their combined science homework. Only two (2) students (10%) reported that they always used laptops, while one (1) student (5%) used them often. A significant proportion, ten (10) students (50%), never used laptops for their homework. This suggests that laptops may not be a primary combined science assignments.

One of the participants named P1 had this to say regarding usage of laptops:

“I always use a laptop to prepare a group science presentation and I also used simulation website like PhET to understand how circuits works.”

4.6.2 SMARTPHONES USAGE

All the twenty (100%) respondents agreed that smartphones are the most common resources that can be used in improving combined science homework scores. Smartphones are valuable tools in learning combined science and enhancing student engagement. With access to

educational apps, online resources and multimedia content, students can explore complex concepts in an interactive and engaging way. The researcher observed that most learners own smartphones at home and smartphones are an essential tool for them when it comes to completing their combined science homework.

As one participant P2 noted the following:

“Smartphones enables us to learn at our own pace, revisit difficult topics and receive instant feedback on assignments and quizzes.” P2

Another student echoed this sentiment, stating:

“When I was struggling with photosynthesis, I used an interactive simulation on my phone that showed how plants make food, and it really helped me understand the process.” P1

A similar viewpoint was shared by another participant:

“I think technology helps me get better grades because I can access lots of resources and videos that explain things clearly.” P3

4.6.3 WIFI USAGE

The results in table above shows that about 11 respondents, which accounts for 55% of the total respondents uses WIFI always. The researcher noted that one (1) student 4% used WIFI sometimes to do the combined science homework. The results shows that students who used WIFI often and neutral were the same, three (3) students which accounts 15%. Two (2) students (10%) never used the WIFI. The researcher observed that WIFI is a crucial resource for many students, likely facilitating their access to online materials and resources.

Two participants echoed this statement, stating:

“We always use WIFI to attend virtual group discussions”. (P2,P1)

4.6.4 CELL PHONE USAGE

Interestingly, the research distinguished between Smartphone and Cell phone. While smartphones were widely used, cell phones were not as commonly used for combined science homework. No students reported always using cell phones, and only three (3) students (15%) used them often. A significant proportion, twelve (12) students (60%) were neutral about using cell phones, suggesting that they may not be a primary resource for homework. The results shows that the minority of students use cell phones to send text messages to friends asking about the due date for science homework and also call each other to discuss a group experiment task.

4.7 EFFECTIVENESS OF USING TECHNOLOGY IN COMBINED SCIENCE HOMEWORK

Table 4-4 Likert Scale for Technology effectiveness

Item	Question	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
		(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
1	Using technology in doing the Homework has become more engaging	0	0	1	5	1	5	3	15	15	75
2	Using technology in doing the Homework has become easier for collaboration	3	15	2	10	5	25	8	40	2	10
3	Using technology in doing the Homework has become more fun and enjoying	0	0	1	5	7	35	10	50	2	10
4	Using technology in doing the Homework has motivated me in Combined Science	3	15	0	0	2	10	8	40	7	35
5	Using technology in doing the Homework has made my understanding of the subject easier	0	0	2	10	4	20	12	60	2	10
6	Using technology in doing the Homework has become easier for communication	3	15	4	20	2	10	8	40	3	15
7	Science homework is more engaging without technology	14	70	4	20	2	10	0	0	0	0
8	Science homework is more engaging with technology	0	0	0	0	0	0	5	25	15	75

Table 4-4 represents the results of an interview conducted among Form 2 (F2) students regarding the effectiveness of using technology in completing combined science homework. The interview consisted of eight (8) questions, each designed to measure the students' perceptions on various aspects of technology integration in their homework.

The first question asked about the level of engagement when using technology for homework and a significant majority (75% strongly agreed and 15% agreed) responded positively, indicating that technology has a significant impact on making homework more interesting. On the other hand, the minority (5%) of students disagree that using technology in doing homework has become more engaging. Similarly, the students generally agreed that technology

enabled collaboration (40% agreed and 10% strongly agreed), suggesting that while technology does enable collaboration, its effectiveness in this regard is not as noticeable as in making homework more engaging.

However, another question assessed whether technology made homework more enjoyable and the responses were mostly positive with (50%) agreeing and (10%) strongly agreeing. This indicates that technology not only makes homework more engaging but also contributes to a more enjoyable learning experience. On the other hand, a significant proportion of students (5% disagreeing and 35% neutral). A question examined if technology motivated students in combined science and a considerable proportion (40% agreed and 35% strongly agreed) felt motivated, highlighting technology's role in enhancing student motivation. Moreover, the students believed that technology improved their understanding of the subject, with 60% agreeing and 10% strongly agreeing, 10% disagreeing and 20% neutral.

The students were also interviewed whether technology simplified communication during homework, and while (40%) agreed and (15%) strongly agreed, a notable percentage (15% strongly disagreed and 20% disagreed). The second from last question posed a comparing view, asking if science homework was more engaging without technology and a notable majority (70% strongly disagreed, 20% disagreed and 10% neutral) opposed the view, supporting the idea that technology is seen as a positive factor in making homework more engaging. The final question asked if science homework was more engaging with technology and a powerful majority (75% strongly agreed and 25% agreed) supported, further solidifying the view that technology enhances the engagement factor in homework.

4.8 CHALLENGES FACED BY LEARNERS WHEN USING TECHNOLOGY

Table 4-5 Challenges faced by F2 learners when using technology in doing combined science homework

Challenge	Yes		No	
	(n)	(%)	(n)	(%)
Connectivity problems (poor or slow network)	8	40	12	60
Lack of clear instructions	4	20	16	80
Distractions such as over-reliance on technology	10	50	10	50
Eye strain and physical health	14	70	6	30
Lack of technical support	3	15	17	85
Lack of control on buying data bundles	5	25	15	75
Lack of control of technological devices	9	45	11	55

4.8.1 CONNECTIVITY PROBLEMS (POOR OR SLOW NETWORK)

The challenge was reported by 40% of the students (8 out of 20), indicating that nearly half of the respondents faced issues with their internet connection. The researcher observed that connectivity problems are a significant obstacle for many students when using technology for their homework. However, 60% (12 out of 20) responds that they were not facing challenges when using technology in doing combined science homework.

4.8.2 DISTRACTIONS SUCH AS OVER-RELIANCE ON TECHNOLOGY AND EYE STRAIN AND PHYSICAL HEALTH

Distractions such as over-reliance on technology was reported by 50% of the students (10 out of 20), highlighting that half of the respondents felt that technology was a distraction. In contrast, the other 50% of students never face distractions like over-reliance on technology. This suggests that some students struggled with maintaining a healthy balance between technology use and other aspects of their learning. However, 70% of the students (14 out of 20) respondent that using technology led to eye strain and physical health. On the other hand, the 30% of students respond that they never face challenges like eye strain and physical health when using technology. The researcher noted that this a concerning finding, as it indicates that many students are suffering from the negative physical effects of technology use.

4.8.3 LACK OF CLEAR INSTRUCTIONS AND LACK OF TECHNICAL SUPPORT

Fortunately, most students did not struggle with unclear instructions, with only 20% (4 out of 20) reporting this issue, suggesting that the guidance provided was generally effective. Similarly, a lack of technical support was not a major concern, with just 15% (3 out of 20) of students experiencing this problem, indicating that adequate resources were available to help them overcome technical disabilities. The researcher observed that the instructions and technical support provided were sufficient for most students to navigate technology for their combined science homework.

4.8.4 LACK OF CONTROL ON BUYING DATA BUNDLES AND LACK OF CONTROL ON TECHNOLOGICAL DEVICES

Some of the students also faced challenges related to managing their technology use, with 25% (5 out of 20) reporting a lack of control over buying data bundles, which could be a significant issue for those with limited financial means. Additionally, nearly half of the respondents 45% (9 out of 20) felt that they lacked control over their technological devices, which may be related to issues such as device management, software updates or other technical aspects. The findings

suggest that some students struggle with managing their technology use, both in terms of data usage and device control, highlighting potential areas for support and guidance.

4.9 STRATEGIES THAT CAN BE USED TO MAXIMISE PROBLEMS ENCOUNTERED WHEN USING TECHNOLOGY RESOURCES IN DOING COMBINED SCIENCE HOMEWORK.

Table 4-6 Strategies adopted by F2 learners to maximise problems they face when using technology

Solution to the Problem	Strongly Disagree		Disagree		Strongly Agree		Agree	
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
Help from relative	2	10	4	20	10	50	4	20
I do it myself	3	15	8	40	2	10	7	35
Teacher's guidance	0	0	4	20	4	20	14	70
Others	0	0	4	30	10	50	4	20

From the information gathered, it is noted that the strategy that students were getting help from the relatives was strongly agreed upon by (50%) of the students (10 out of 20) indicating that half of the respondents rely heavily on their relatives for assistance. An additional 20% (4 out of 20) agreed with this approach, suggesting that a significant proportion of students seek help from their family members. However, 20% (4 out of 20) disagreed, indicating that some students may not have access to or prefer not to seek help from their relatives.

However, the strategy "I do it myself" was not a popular choice among the students, with only 10% (2 out of 20) strongly agreeing and 35% (7 out of 20) agreeing. A significant 40% (8 out of 20) disagreed, indicating that many students do not prefer to work without assistance when faced with challenges. There are students who respondent that they seek teacher's guidance and was widely accepted with 20% (4 out of 20) strongly agreed and 70% (14 out of 20) agreed. This suggests that the majority of students value the guidance provided by the teachers when using technology for their combined science homework.

4.10 CHAPTER SUMMARY

This chapter presented the research findings, analysis and interpretation, addressing the issues introduced in Chapter one. The chapter provides an in-depth examination of the data collected,

highlighting the key results and trends that developed from the study. The next chapter will summarise the study and draw conclusions based on the findings.

5 CHAPTER FIVE: SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

5.1 INTRODUCTION

This chapter provides a summary of the major findings, presents conclusions drawn from the study and offers recommendations for improving the use of technology in combined science homework at Kenville High School.

5.2 SUMMARY OF THE PROJECT

The study was carried out to investigate the effectiveness of technology in improving combined science homework scores and student engagement at Kenville High School. Using qualitative data gathered through interviews with twenty (20) Form 2 learners, the study investigated the types of devices students and their families owned, their access to technology, the platforms they used for completing science homework and their perceptions of how technology influenced their learning. The research aims to find out whether students who used technology perform better and feel more engaged compared to those who use traditional methods. The research was important to teachers, students, curriculum developers and the researcher herself as it offers insights into improving teaching and learning through technology. The literature reviewed establishes how technology has proven to enhance academic performance in science education, citing studies that report significant improvements in student homework scores when digital tools are used.

It was found that the top devices that were owned by learners did not include the Cellphone since it does not give access to the internet. Doing research would be near impossible with such a device. However, the study acknowledges that, there are still some people who own it because the economical and background status cannot be controlled. Many factors do come to play this regard. As such, the finding showed the unequal distribution of devices in learners, reinforcing the digital divide of the haves and do not haves. Students widely used platforms like Chat AI (100%) and Google (90%) for completing their science homework, suggesting a high level of reliance on digital tools for academic support. Most learners reported that technology made homework more engaging and easier to understand, with 75% strongly agreeing that it helped them stay motivated. Despite these benefits, challenges such as eye strain, distractions and poor internet connectivity were common. However, learners adopted various strategies to cope including seeking help from teachers, family members and peers.

Given the fact that there is shortage of technological infrastructure in schools, the costs associated with technological devices such as laptops, Smartphones and iPads have been

pushed to the parents in the form of Bring your Own Device (BYOD) Approach. This has seen homework being given to learners through various forms such as WhatsApp, Emails, and Google Classroom amongst others. This motivated the study to investigate whether the devices being used by learners were owned in person or by parents or other people in their families. This would allow the researcher to understand the challenges and opportunities that these people face in the process.

5.3 CONCLUSIONS

The researcher have drawn several conclusions based on the study's data. The findings of the study clearly show that technology plays a significant role in enhancing both the engagement and academic performance of Form 2 learners at Kenville High School in the context of combined science homework. Learners not only use technology extensively, especially smartphones but also benefit from improved understanding, increased motivation and easier access to interactive content. While the benefits are notable, several challenges limit the full potential of technological integration including device inequality, connectivity issues and physical health concerns. Despite these obstacles, students have found effective coping strategies through teacher guidance, family support and peer collaboration.

5.4 RECOMMENDATIONS

Based on the findings, the following recommendations are proposed.

5.4.1 FOR TEACHERS

- i. Provides clear instructions and guided support for students using online platforms.
- ii. Recommend credible educational apps and simulations such as PhET and demonstrate how to use them.
- iii. Monitor and assist students with data-saving tips and device management techniques to reduce over-reliance and distractions.

5.4.2 FOR STUDENTS

- i. Make use of educational platforms and avoid distractions during homework time.
- ii. Seeking help from teachers and relatives when facing challenges with homework technologies.
- iii. Practice healthy tech habits, including taking breaks and adjusting screen time to prevent eye strain and tiredness.

5.4.3 FOR PARENTS

- i. Continue to support learners with access to devices and internet wherever possible.
- ii. Encourage responsible use of technology and monitor for signs of overuse or eye strain.

5.4.4 FOR POLICYMAKERS

- i. Promote policies that support Bring Your Own Device (BYOD) approaches especially with subsidised data plans for educational use.
- ii. Launch community-based digital literacy initiatives for both learners and guardians.

5.4.5 FOR SCHOOL ADMINISTRATION

Train teachers and on integrating technology in homework tasks more effectively, especially in designing structured and guided online activities

5.5 CHAPTER SUMMARY

This chapter presented conclusions and recommendations based on the study's findings, highlighting key takeaways and suggested actions. The chapter effectively tied together the study's results, implications and potential methods for continued research.

6 REFERENCES

1. Carle, A. C., Jaffee, D., & Miller, D. (2009). Engaging college science students and changing academic achievement with technology: A quasi-experimental preliminary investigation. *Computers & Education*, 52(2), 376380. doi:10.1016/j.compedu.2008.09.005.
2. Chen, S.Y., Chen, C.H., & Liu, S.Y.(2022).History of beliefs about science. *International Journal of Science and Mathematics Education*, 20,69-92. science reading materials as everyday homework to improve middleschool students' epistemological <https://doi.org/10.1007/s10763-022-10285-3>
3. Costley, K. C. (2014). The Positive Effects of Technology on Teaching and Student Learning .Retrieved from ERIC: <https://files.eric.ed.gov/fulltext/ED554557.pdf>.
4. Creswell, J.W (2009). *Research design: qualitative, quantitative, and mixed methods (3rded.)*. Thousand Oaks, CA: Sage.
5. De Smet, E., Voet, M., & De Wever, B. (2020). The effectiveness of virtual labs in science education: A systematic review. *Computers & Education*, 152, 103885.
6. Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2018). The influence of technology on teacher education. *Journal of Teacher Education*, 69(2), 147-161.

7. Feng, M., & He, Y. (2021). An analysis of adaptive learning technologies in K-12 education. *Computers in Human Behavior*, 119, 106745.
8. Hattie, J. (2019). *Visible Learning: Feedback*. Routledge.
9. Hwang, G. J., Hung, C. M., & Chen, N. S. (2020). A seamless learning approach for improving student learning outcomes in science education. *Journal of Educational Technology Development and Exchange*, 12(1), 1-20.
10. Johnson, D. W., & Johnson, R. T. (2019). Cooperative Learning: Improving University Instruction by Basing Practice on Validated Theory. *Journal on Excellence in College Teaching*, 25(3), 21-41.
11. Kay, R. H., & Knaack, L. (2020). Exploring the use of Web 2.0 technologies in higher education: A review of the literature. *Journal of Computing in Higher Education*, 32(1), 1-21.
12. Kirschner, P. A., & van Merriënboer, J. J. G. (2020). Do learners really know best? Urban legends in education. *Educational Psychologist*, 53(2), 119-133.
13. Koehler, M. J., & Mishra, P. (2020). Considering the role of experience in teacher educators' adoption of educational technology. *Journal of Technology and Teacher Education*, 28(1), 5-24.
14. Koehler, M. J., & Mishra, P. (2020). The technological pedagogical content knowledge framework. In *The Cambridge Handbook of Motivation and Learning* (pp. 369-386).
15. Kuhn, D., Pease, M., & Wirkala, C. (2020). Using simulations and games to teach complex concepts in science education. *Journal of Science Education and Technology*, 29(2), 149-158.
16. Mayer, R.E.; Moreno, R. Nine ways to reduce cognitive load in multimedia learning. *Educ. Psychol.* 2003, 38, 4352.
17. Ravizza, S. M., Hambrick, D. Z., & Fenn, K. M. (2016). The relationship between media multitasking and academic performance. *Computers in Human Behavior*, 65, 119-126.
18. Schindler, L. A., Burkholder, G. J., Morad, O. A., & Marsh, C. (2017). Computerbased universidad y sociedad del conocimiento. *International Journal of Educational technology and student engagement: A critical review of the literature: Revista de Technology in Higher Education*, 14, 128. doi:<http://dx.doi.org.ezproxy.nwciowa.edu/10.1186/s4123901700630>.
19. Smith, J. (2020). The Role of Technology in Education. *Journal of Educational Technology*, 15(3), 45-58.
20. Tamim, R.M., Bernard, R.M., Borokhovski, E., Abrami, P.C., & Schmid, R.F. (2011). What forty years of 81(1), 428. <https://doi.org/10.3102/003465431039> research says about the impact of technology on validation study. *Review of Educational Research*, learning: A second-order meta-analysis and 3361.
21. Wang, Y., Zhao, C., & Wang, Y. (2020). The impact of technology on student learning outcomes in science education: A review.

7 APPENDICES

7.1 Appendix 1: STUDENT INTERVIEW GUIDE

I am Esther Mutema (B223497B) from Bindura University of Science Education. I am conducting a research titled:

“Effectiveness of technology in improving combined science homework scores and student engagement”.

The *purpose* of the research is to investigate how technology affects your performance in combined science homework, and also your interaction with the content and your peers. This is motivated by the need to determine the tools and methods that boost your engagement and motivation in the science subject.

Please note that the information gathered in this study will be treated with confidentiality through the use of pseudonyms. As such, the principle of anonymity will prevail.

Your participation in this study is much appreciated, feel free to give your honest views.

Indicate your willingness to participate in the study by ticking the option that best applies to you below:

Yes ☐

No ☐

If you indicated No, Thank you so much and your participation ends here. Otherwise, you can proceed with the questionnaire

SECTION A: DEMOGRAPHIC INFORMATION

1. Tick the age group that applies to you

☐ 12-13 yrs ☐ 14 -15 yrs ☐ 16 -17yrs ☐ 18 yrs and above

2. Tick the Gender that applies to you

☐ Male ☐ Female

3. Select the level of education you are inu

☐ Form 1 ☐ Form 2 ☐ Form 3 ☐ Form 4

SECTION B: OWNERSHIP AND ACCESS OF TECHNOLOGY

1. Which of the following devices do you own in person?

☐ Smartphone

☐ Cell phone

- ☐ Laptop ☐ iPad
- ☐ Other _____ (Specify)

2. Which of the following devices are owned by people you live with?

- ☐ Smartphone ☐ Cell phone
- ☐ Laptop ☐ iPad
- ☐ Other _____ (Specify)

3. Do you have access to any of the technologies selected in No 5. To do the Combined Science homework?

- ☐ Yes ☐ No

SECTION C: TECHNOLOGY USAGE IN COMBINED SCIENCE HOMEWORK

4. How often do you use the technology below to do the homework? Tick what best applies to you

Item	Question	Always	Often	Neutral	Sometimes	Never
1	Laptop	☐	☐	☐	☐	☐
2	Smartphone	☐	☐	☐	☐	☐
3	Wi-Fi	☐	☐	☐	☐	☐
4	Cell phone	☐	☐	☐	☐	☐
5	iPad	☐	☐	☐	☐	☐
6	Desktop Computer	☐	☐	☐	☐	☐
7	Others	☐	☐	☐	☐	☐

5. What online platforms do you most frequently for combined science homework?

- ☐ PhET Simulations ☐ Chat AI ☐ Others(Specify)
- ☐ Poe ☐ Google

SECTION D: EFFECTIVENESS OF TECHNOLOGY USAGE

1. Do you think using technology has improved your understanding of combined science concepts?

- ☐ Yes ☐ No

2. Indicate your level of agreement with the following statements(*Tick what best applies to you*)

Item	Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Using technology in doing the Homework has become more engaging	☐	☐	☐	☐	☐
2	Using technology in doing the Homework has become easier for collaboration	☐	☐	☐	☐	☐
3	Using technology in doing the Homework has become more fun and enjoying	☐	☐	☐	☐	☐
4	Using technology in doing the Homework has motivated me in Combined Science	☐	☐	☐	☐	☐
5	Using technology in doing the Homework has made my understanding of the subject easier	☐	☐	☐	☐	☐
6	Using technology in doing the Homework has become	☐	☐	☐	☐	☐
7	Using technology in doing the Homework has become	☐	☐	☐	☐	☐
8	Do you think science homework is more engaging with or without technology	☐	☐	☐	☐	☐

3. Can you share a specific example where technology helped you understand a difficult science concept?

SECTION E: Challenges and support

1. What challenges do you face when using technology for science homework?

Challenge	Yes	No
Connectivity problems (poor or slow network)		
Lack of clear instructions		
Distractions such as over-reliance on technology		
Eye strain and physical health		
Plagiarism and academic integrity		
Lack of technical support		
Lack of control on buying data bundles		
Lack of control of technological devices		

2. How do you troubleshoot technical issues when working on science homework?

- ☐ Help from my relative ☐ I do it myself
- ☐ Restart my device

3. What support systems are in place to help you effectively use technology for science homework?

- ☐ Parents ☐ Siblings provide guidance
- ☐ Teacher's guidance ☐ Other.....specify

SECTION F: COMPARISON AND PREFERENCE

1. Which one of these approaches do you prefer for science homework?

- ☐ Traditional methods ☐ Technology based

SECTION G: FUTURE DIRECTIONS

1. What tools or features would you like to see in future technology-based science learning platforms?

- ☐ More interactive simulations and games ☐ Personalised learning paths and feedback

2. How do you think technology can be further utilised to improve science education?

☐ More online resources

☐ More tutorials

☐ Virtual field trips

☐ Gamification and rewards for learning

***** The End and THANK YOU*****