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The Effect of Social Media and Digital Devices on Academic Performance in Middle and High School Students A Thesis Presented in Partial Fulfillment of the Requirements for the Degree Master of Science in Special Education by Martine Irumva 2023

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Abstract

The use of technology has tremendously increased in the education sector, especially during the Covid 19 pandemic, for middle and high school students through social media and digital devices. This study investigated the effects of social media and the use of digital devices among middle and high school students in relation to their academic performance. Also, the study examined how social media and digital devices use among middle and high school students has changed compared to before, during and after the Covid-19 pandemic.

An online survey was used through Andrews University class climate to collect the data from a hundred seventeen students aged 12 to 19 years old and from 7 to 12 grade.

The results showed that the majority of the students, 27%, have more than six social media accounts, 28% spend more than four hours using social media and digital devices, and 70% use mobile phones.

Also, the results showed no significant relationship between the time students spend on social media or using various digital devices with their academic performance.

Moreover, the results revealed that the time middle and high school students spend on social media and using digital devices increased during and after the Covid-19 pandemic compared to before Covid-19.

Keywords: social media, digital devices, academic performance, middle school, high school, Covid-19

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CHAPTER 1

INTRODUCTION

The use of digital devices and social media are one of two areas technology continues to advance and expanding at a fast and so furious speed. (Brown, 2019)

Now than ever, you can access TV channels, watch movies, play games anywhere as long as you have a smart device, the upgrade 3G to 4G and 5G has allowed a very fast internet speed, an easy and fast way to download movies, music, and play games. (Palandrani, 2021)

More than ever, you can connect with people anywhere, at any time around the globe with a social media account. According to our world in data website, Facebook platform alone had 2.4 billion users in 2019. (Esteban Ortiz-Ospina, 2019)

Moreover, there have been tremendous benefits of the digital devices. Such as; the increased various ways to teach students in classes by making lessons more fun and enjoyable. (Lepp et al., 2015.) Smart devices provide easy ways to access online learning anywhere, at any time and at a cheaper cost. (Raja & Nagasubramani, 2018)

The same ways social media has impacted our society. The social media platforms have strengthened many ways families to connect and stay in touch more than before. It has created a sense of teamwork in the classroom, and create communities. (van den Eijnden et al., 2018.)

The Covid 19 world pandemic has brought the reality of the big positive impact the digital world and social media has on human being. Even though the whole world was in lockdown, technology and social media made it possible for people, to still communicate, socialize, study, work, most businesses and organization to still operate to some extent.

On the other hand, the surge of the use of technology and social media negative impacts on physical and mental health that is alarming (Dunckey, 2015)

Study showed that by year 2015, 73% of young had smart phone, reported to spend more than five on social media had mental issues, such as; anxiety, depression and suicidal. (Reporter, 2018). Another study has revealed that between 98-99% pediatricians believe infants, children exposed to TV watching, and media use have negative impacts of poor eating habits, obesity, aggression and brain development. (Gentile, 2004)

Other research among teens age 13 to 18 has found cyberbullying on social media through smart devices. (Joe Gramigna, 2020)

In this context, will be investigating if the usage of social media and digital devices has a retaliation with academic performance in middle and high school students.

Problem Statement

The use of digital devices and social media has saturated our society now more than we could have imagined 20 years ago. (Brown, 2019) According to the Statista website, 3.6 billion are active users on social media worldwide which means more than 49% of the whole world population is active on social media. (Statista, 2021) The growth of digtal devices and social media usage has impacted human social connection tremendously and more strongly, and communication has become easier, faster, and more

effective especially this became more evident during COVID 19 season were 90 percent of adults in USA reported the use of social media and digital devices to be a necessity. (Pew Research Center, 2021)

More than ever the use of digital devices and social media has entangled with society's daily life, especially in the young population. (Esteban Ortiz-Ospina, 2019a)

It is estimated that between 55% and 82% of the all population that uses social media are teenagers and young adults. (Kuss & Griffiths, 2011, p. 3532) The use of social media and technology has advanced at a very high speed, which now is considered a necessity consumed worldwide, however, this comes with a high price.

Various studies are showing that; the increased number of times spent on digital devices and social media has been found to have tremendous negative effects on social, psychological, and academic functioning in adolescents. (Wong & Lam, 2016, Al-Menayes, 2015, Barton et al., 2018, Lepp et al., 2015, Demirbilek & Talan, 2017, Kibona & Mgaya, 2015, Karpinski et al., 2013, Al-Menayes, 2015, Sharif et al., 2010, Limniou, 2021, Abdulahi et al., 2014, Jiang, 2021). Also, other effects such as addiction to intensive game and social media disorder. (van den Eijnden et al., 2018, p. 702). Poor psychological well-being. (Goh et al., 2019), decreasing level of physical activities. (Healy et al., 2016). Loneliness and suicidal thoughts. (Berryman et al., 2017), another study revealed harmful effects of excessive time spent on-screen on memory, neurodevelopment, learning, and mental health. (Neophytou, Manwell, & Eikelboom, 2019).

Purpose of the Study

The purpose of this study is to investigate the effects of the amount of time spent using digital devices and social media is correlated to academic performance in middle and high school students.

Majority of studies had a focus on the effects of use social media and digital devices on high learning level. (Al-Menayes, 2015, Barton et al., 2018, Lepp et al., 2015, Demirbilek & Talan, 2017, Kibona & Mgaya, 2015, Karpinski et al., 2013, Al-Menayes, 2015, Limniou, 2021, Abdulahi et al., 2014, Jiang, 2021). The aim of this study is to focus on middle and high school students, age between 14 to 19 who study in a private Christian school that have restriction on the use of social media and digital devices during class time. Although, there are studies done on investing the effects of social media and digital devices on children (van den Eijnden et al., 2018, Sharif et al., 2010) with the increase of internet use during COVID 19 (Branscombe, 2020). This study will investigate the difference on the level of the impact of time spend using social media and digital devices before COVID 19 and now, among students in middle and high school.

Significance of the Study

Since there is still a great misunderstanding of the best way to use digital devices and social media among various education stakeholders at the middle and high school level. (Md, 2015, pp. 21–22) Therefore this study will provide a better understanding on the effects the amount of time spent using digital devices and social media has on middle and high school students who are performing below average academically.

Due to main researchers focusing on college students (Al-Menayes, 2015, Barton et al., 2018, Lepp et al., 2015, Demirbilek & Talan, 2017, Kibona & Mgaya, 2015,

Karpinski et al., 2013, Al-Menayes, 2015, Limniou, 2021, Abdulahi et al., 2014, Jiang, 2021). This study will provide more information to middle and high school educators on the significant effects of time usage of digital devices and social media on academic performance for middle and high school students. This information may help to provide effective strategies to support middle and high school students who are struggling academically.

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Research Questions

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1. What is the amount of time is spent on social media and the digital devices by middle and high school students?

2. What is the academic performance of middle and high school students who spend time on social media and digital devices?

3. Has the amount of time spent on social media and digital devices increased during COVID in middle and high school students?

4. Has the amount of time spent on social media and digital devices increased post-COVID 19 in middle and high school students compare before Covid19?

5. Is the amount of time on social media and digital devices associated with the academic performance of middle and high school students?

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Research Hypothesis

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Previous research studies put forward a negative relationship between time spent using social networking and academic performance in universities students. (Wong & Lam, 2016, Al-Menayes, 2015, Barton et al., 2018, Lepp et al., 2015, Demirbilek & Talan, 2017, Kibona & Mgaya, 2015, Karpinski et al., 2013, Al-Menayes, 2015, Sharif et al., 2010, Limniou, 2021, Abdulahi et al., 2014, Jiang, 2021). College students who spent

more and more time on their smartphones, digital devices and engaged in social media were found performing poorly academically specifically in their exams and assignments. (Lepp et al., 2015, p. 5)

Hypothesis # 1: Middle and high school students who spent more than 6 hours per day on digital devices or social media platforms will have a below average in their latest GPA score.

A study found the usage digital devices cause distractions, increase procrastination and poor time management which results in poor academic performance in college students. (Limniou, 2021)

Hypothesis # 2: Middle and high school students who spent more than 6 hours on the digital devices and social media have high level of missing assignments and low performance in quizzes and tests.

Another recent study revealed an increase in use of technology due to Covid 19 pandemic among children. (Drouin et al., 2020)

Hypothesis # 3: COVID 19 has increase the time spend on social media and use of digital devices among middle and high school students compered to before the Covid 19 pandemic.

Null Hypothesis: There is no significant relationship between the time spent of social media and digital devices with academic performance for middle and high school students.

Limitations of the Study

As the studies show an increase in social media and digital device usage among middle and high school students with different negative effects academically and

emotionally, the studies did not provide more ways teachers or students can use social media and digital devices healthily. (Mustafa et al., 2020.) Also, most of the studies did not provide many ways teachers and parents can intervene in case they identify social media and digital devices usage being associated with academic performance in students/ child. Lastly, many studies have focused on investigating the effects of social media and the use of digital devices on college students, not the whole student population is represented. (Demirbilek & Talan, 2017)

Definitions of Terms

Internet Addiction Disorder (IAD): Internet addiction disorder is also known as problematic internet use or pathological Internet use, is generally defined as problematic, compulsive use of the internet, that results in significant impairment in an individual's function in various life domains over a prolonged period. Young people are at particular risk of developing an internet addiction disorder. (Wikipedia contributors, 2021)

Social media: websites and software programs used for social networking. social media sites such as Facebook and Twitter. Companies need to invest in social media to make it work for them. Social media are changing the way people communicate, work, and shop. (Oxford University Press, 2021)

Social networking: communication with people who share your interests using a website or other service on the internet. (Oxford University Press, 2021).

MAP Testing: Measure of academic progress, it is a standardized test done is at the beginning or towards end of every term in schools.

CHAPTER 2

LITERATURE REVIEW

Purpose of Literature Review

The purpose of this literature review is to provide foundation understanding regarding socio media and digital devices uses in relation to academic performance among middle and high school students.

Although many studies found, investigated the effect of the use of social media and digital devices were focused more on college students, very few studies have taken into consideration the effect of the use of social media and digital devices in middle and high school students age between 13-19.

Literature Table Summary

Study	Targeted Group	Focus	Main Finding
Barton, Adams, Browne, Arrastia – Chisholm (2018)	717 Undergraduate and graduate students	The effects of social media usage on attention, motivation and academic performance	There was a significant, negative relationship between social media usage and GPA
Lepp, Barkey, Karpinski (2015)	536 undergraduate students	The relationship between cell phone use and academic performance for college.	The use of cellphone was a negative predictor for college student's academic performance
Demirbilek, Talan (2017)	122 Turkish Undergraduates	The effect of social media multitasking on classroom performance.	As student who were exposed to social media messaging decrease student's productivity and performance
Kibona, Mgaya (2015)	100 university students	Smart phone's effects on academic performance of high learning students	Smart phone has a negative progression on student's academic performance.
Karpinski, Kirschner, Ozer, Mellot, Ochwo (2012)	590 undergraduates, 285 graduates.	An exploration of social networking site use, multitasking, and academic, performance among United States, and European university students.	A negative relationship between social networking site use and academic achievement either they are multitasking or not.
Menayes (2015)			

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	1327 college students	Social media use, engagement and addition as predictors of academic Performance	The amount of time spends on social media effects academic achievement in a negative way.
Eijnden, Koning, Doornwaard, Gurp, Bogt (2018)	543 adolescents age from 12-15 years old	The impact of heavy and disordered use of games and social media on adolescent's psychological, social, and school functioning.	A small negative effect of heavy social media and intensive game use on adolescents GPA
Sharif, Wills, Sargent (2010)	6522 youth aged 10 to 14 years old.	Effect of visual media use on school performance: Prospective Study	This longitudinal study shows harmful effect of visual media use on school performance.
Limmniou (2021)	361 psychology undergraduate students	The effect of digital device usage on student academic performance: A case study	The digital device usage causes distractions, causes multitasking, and enhanced procrastination, poor time management.
Abdulahi, Samadi, Gharleghi (2014)	152 university students	A study on negative effects of social networking sites such as Facebook among Asia pacific university.	The more frequent the students use social networking sites the more Academic performance decrease.
Jiang (2021)	3,123 undergraduates	Problematic social media usage and anxiety among	The Excessive social media internet use affected

	from university of Shanghai	university students during the COVID-19	students psychologically in negative way which had a negative impact on their academic performance.

According to the Literature summary table above, is obvious that lot of research has been done, using various instruments on the effects of social media and digital devices usage on academic performance with college students. However, only 2 out of 11 researches were focused on students below 16, which reveals a limited information about the same effects on middle and high school students with the age of 13 to 19. As the number of teens who have access to digital devices and socio media accounts has increased. (Rideout & Robb, 2019) it is important to investigate if the use of socio media and digital device is corelated to academic performance, also in comparison of the social media and digital device usage before Covid 19 and after Covid 19.

Social Media and Academic Performance

Social media is a form of communication through various digital devices over which the users create a profile and allows the user to connect with the social network community. Social media websites, apps, and platforms give a chance users to share ideas, give opinions, share audios, videos, and personal messages. Statista website reports show that there is an estimation of 3.6 billion people who use social media worldwide. (Statista, 2021a) Also, according to Statista, the most used social media platforms by middle and high school students age between 13 to 19 are Snapchat, TikTok, Instagram, Twitter, Facebook, YouTube, WhatsApp, Pinterest, and Tumblr. (Statista, 2021)

In 2018, Pew Research Center gave a report that shows about 95% of teens in the US have access to smartphones and almost 45% of teens are on social media regularly. (Anderson & Jiang, 2018) No one can refute the reality of the tremendous growth of the use of social media in recent years, on the other hand; many studies are showing the increased negative effects the social media has on the brain which leads to poor academic performance.

Jamal J. Al-Menayes did research on social media use, engagement, and addictions as predictors of academic performance on 1327 students from college, who 96% were between the ages of 18 to 25. Students were requested to fill a paper questionnaire anonymously. Students were asked to submit their GPA scores as they fill the form and answer questions that were related to how much time they spend on social media per day.

The study found out that the amount of time students spent on social media had a negative effect on their academic performance. In that light; students who spent more time on social media had poor academic performance. The researcher thinks the poor academic performance came as a result of not having enough time to prepare the exams and do assignments because more time was consumed on social media. (Al-Menayes, 2015)

The Jamal study confirmed the Griffiths study that revealed the social media addiction existed among the young students and gave a warning of its growth. (Griffiths, 2000)

Studies are now discovering an increase in social media dependency among middle and high school students that leads to media addictions. (Mustafa et al., 2020, p. 239.)

Another study was done by Yubo, Dan, Tonglin, Lily, and Qi while examining social media addiction, its impact, mediation, and intervention a survey study was done on 232 college students. The findings shows that the media addiction was causing mental, physical, and emotional health such as; lack of sleep, a lack of focus, lack of time management, and a lack of extensive time of the study, which further affected student's ability to perform well academically. (Hou et al.2019) Students who do not have enough time to sleep have been found to perform poorly in their exams due to stress. (Ahrberg et al., 2012.)

Furthermore, spending more time on social media has been associated with the inability to stay focus on a task especially academic ones that require a high level of thinking and analyzing. As social media saturate human lives, more than ever students are increasingly using social media anywhere at any time this includes in classrooms, results from multitasking behavior in classrooms are increasing.

The study on cognitive control in media multitaskers has revealed that those who are heavily multitasking on media are very distracted by what they are consuming that they cannot be able to give their attention to the task they are doing. (Ophir et al., 2009.) Muhammet and Tarik did a study on the effect of social media multitasking on classroom performance on 122 Turkish undergraduate students. The findings show that the students who were given a chance to use their digital devices and access to social media in class, their work grades were low compare to the group of students who were given the

condition to use a pen and a paper only to complete classwork. One of the identified

reasons was multitasking caused by students engaging on their mobile phone while

working on their class activities (Demirbilek & Talan, 2017, p. 125) The results explain

the reason well of the lack of focus in social media users can be a cause of

underperformance.

Further, another study was done by Aryn, Paul, Ipek, Jennifer, and Pius confirmed

the correlation of social media usage with multitasking. As the researchers were

exploring social networking site use, multitasking, and academy performance among the

United States and European university students age 18-30. The study found the same

trend of a negative relationship between the use of the social networking site and the

GPA in all students, the same results of low GPA were found in all students who were

multitasking while using the social networking site the same time doing classwork.

In addition, previous studies are showing the association between spending more

time on social media with the inability to manage well time, inability to follow the

schedule, inability to allocate accordingly the time to study, and inability to prioritize

because more time is spent on social media, all these inabilities led to poor attendance.

For example; the study that was done in Tanzania on 100 undergraduate students

revealed that students who used their mobile phones to access social media like

Facebook, Twitter, Instagram, and WhatsApp believed it as time wasted because a huge

amount of time could have been used to prepare their final exam. (Kibona & Mgaya,

2015, p. 783)

Muhammet and Taril highlighted an observation that digital tools types of social

media a person uses does not affect the amount of time spent at all, either you use a tablet

or a computer or a mobile phone as long as you are using social media the effect it has on the academic performance are the same. (Demirbilek & Talan, 2017)

However, some studies find the effect of social media on academic performance not to be strong compare to others. For example, in their longitudinal investigation on the impact of heavy and disordered use of games and social media on adolescents, psychological, social, and school functioning. Regina, Ina, Suzan, Femke, and Tom found out that there is a small negative effect on academic performance as a result of using heavy social media. (van den Eijnden et al., 2018, p. 702.)

Interestingly many studies are finding the same negative effects, negative correlation between the use of social media and academic performance due to the ability social media has on our brain that cannot allow a human brain to process, learn and apply the information being thought in a class while focusing on media. Although many studies have been on the effect of social media on academic performance, most of them have a focus on college students very few have provided a large sample size that represents various student populations. (Demirbilek & Talan, 2017)

The school counselor and special education specialist should create more intervention programs that are effective in lowering the usage of digital devices and social media in students to improve their learning performance. (Hou et al., 2019) and Schools should organize seminars to educate parents more on the implication of social media usage on academic performance. (Kolan & Dzandza, 2018, p. 16)

Digital Devices and Academic Performance

In the past few decades, technologies have made an incredible advancement especially in easy access and convenient usage of digital devices used as a form of leisure

and entertainment. Digital devices such as TV screens, video games, smartphones, tablets, music devices, and computers are the most used among middle and high school students. In 2019 Common Sense Media produced a report that revealed more than 69% of American teens are on-screen every day. Approximately 62% of American teens spend between 4 to more than 8 hours on media using various digital devices. Also, the ownership of digital devices such as smartphones, laptops, video game players, tablets, desktop computers, smart speakers, E-reader, and virtual reality headsets has increased among teens. (Common Sense et al., 2019.)

They are many studies that are being conducted on the impact or a correlation between the usage of digital devices and academic performance. Some studies have found a positive correlation between time spent on digital devices for school purposes and a high GPA score. (Drain et al., 2012, p. 230.) However, the Common Sense study has revealed that most hours of digital usage among teens which is the 4 to more than 8 hours are spent on media, not school purposes.

An experiment on cell phone usage and academic performance was done on nearly 250 college students in Brazil. Daniel and Alexandra used app usage tracker and moment app to measure the time spent using the cell phone, and collected student of a standardized test (G-MNPS) test score. Researchers discovered a compelling negative impact of cellphone usage on academic performance. The study revealed that every 10 minutes a student was adding to spend more time on media, the score for his examination was going lower. (Felisoni & Godoi, 2018)

Furthermore, another study done by Andrew, Jacob, and Aryn on 536 undergraduates from USA public schools as they were investigating the relationship

between Cell phone use and academic performance in a sample of college students, confirmed the same theory. The study found out that the more time students spent using smartphones the more their accumulative GPA was being affected negatively. (Lepp et al., 2015.)

Digital devices affect academic performance in the classroom in many ways. First, digital devices in case allowed in the classroom bring distraction during lesson presentations as result students are unable to understand, remember and apply the new material. Second, the study has proven that even if the teacher is monitoring his/her students as they are using their digital devices that do not remove the distraction therefore the study found either monitored or not the usage of mobile devices has negative effects on academic performance. (Carter et al., 2017.)

In addition, as more digital devices are ending up in the hands of teens and the time consumed on them is increasing. The more impact they have of the sleep. Consequently, there is a correlation between the use of digital devices and poor sleep patterns among adolescents. Studies have confirmed the impact of usage of digital devices among teens associated with lack of sleep which is a proven theory of being a negative impact on academic performance among teens. The study of Mari, Ståle Kjell, Reidar, Astri Børge while examining sleep and use of digital devices in adolescence: results from a large population-based study. They found a great relation of students who were using the digital devices use before bedtime is related to sleep deficiency. (Hysing et al., 2015) this is due to the fact that digital devices emit an unusually bright light that affects the human body to secrete the sleep hormone melatonin. The lack of

nonrestorative sleep on the young has been correlated with poor memory abilities. Students are irritated and have low academic performance. (Dunckey, 2015, pp. 41)

Likewise, the use of digital devices for entertainment in teens has been associated with poor management of time due to a false sense of time. A study that was done by Pei-Luen, Shu-Yun, and Chin-Chow, while investigating the Time Distortion for Expert and Novice Online Game Players on 64 teenagers and young adults who play video games revealed that more time spent on the online game can lead to addiction and a false sense of time. (Rau et al., 2006, p. 401) Consequently, in the case of students, they are not able to determine correctly the time needed for schoolwork, they forgot easily the school activities time and they procrastinate a lot all these factors contribute to poor academic performance.

Also, digital device usage in young people has shown an impact on the brain, especially on emotional dysregulation. (Dunckey, 2015, pp. 49) Students who spent more time on their digital devices, have mood dysregulation distinguish by meltdowns, aggression, mood swings, inability to tolerate the challenging situation, impatience, and irritability immediately after screen time or days after. (Dunckey, 2015, pp. 49) All the above will obviously affect the learning process of students in a negative way.

An observation made was that many studies focused on the use of cellphone and video games in the relationship with academic performance. It will be helpful to know the effects of other digital devices too.

The Use of Social Media and Digital Devices During and After Covid19 Pandemic

The Covid19 pandemic put the whole world to a stand in the beginning on 2020. Many countries had to make serious decision in order to protect the citizens and

preventing the virus to continue spreading. Most countries had to go for lockdown, which means schools and students had to rely of social media and digital devices to continue the learning, and interchange information.

At the beginning of this study, they were no research studies on the usage of social media and digital devices in relation with student's academic performance. However; they are few studies that findings contribute to literature review on the usage of social media and digital during Covid 19 and after Covid 19.

The study done by Karimeldin, Abdulelah, Abubakar, Jaber, Sultan, Mushabab, Mohammed, and Mutasim on 203 male medical students was assessing the patterns of social media uses and their impact on the learning of male medical students during the COVID-19 pandemic. The findings revealed that more than 50% of students, the learning was enhanced by using social media during Covid 19, and their conclusion was that social media was interactive means for learning in medical school during Covid 19. Salih et al. (2022).

Salzano et al. (2021) and his peers in their research on Quarantine due to the COVID-19 pandemic from the perspective of adolescents: the crucial role of technology on 1860 youth aged 12–18 years old found out there was an increase in the use of technology due to Covid 19 among teens and adolescents.

This was attributed to the banning of face-to-face or physical class meetings so most schools opted for online class meetings. In addition, they were an increase in the usage of technology during lockdown because it was the only means to connect with the rest of the world.

Another study was done 251 adolescents' students in Pakistan by Abraish, Asad, Muhammad, Fizza and Taha with age 14 to 24, was investigating Effects of COVID-19 pandemic and lockdown on lifestyle and mental health of students. The findings show the sleeping patterns of students being affected most negatively and a decline in mental health of students as a result of the increase in the usage of social media during lockdown.

In this study will be investigating the effects of social media and digital devices on academic performance focusing on middle and high school students because now more than ever more teens have access to digital devices and are spending more time on media compared to the last five years. (Common Sense et al., 2019) Furthermore, as we witness a high rise of usage of digital devices and social media access and usage among teens during Covid 19, studies also are showing various harmful effects physiologically, psychologically, and academically.

It is very essential to study more the negative effects of using social media and digital devices as form of entertainment and leisure to provide more information to help middle and high school students, teachers, school counselors, school administrators, and parents to start learning and acquire a deep understanding of the harmful effect social media and digital device usage have on academic performance. (Mustafa et al., 2020, p. 239).

CHAPTER 3

METHODOLOGY

General Introduction

The purpose of this study is to investigate if the amount of time of social media and digital devices among the 7th – 12th students from a private Christian school in East Africa, is associated with academic performance, how the usage of social media and digital devices has been impacted during and post COVID-19 among the students.

Type of Research

The study used a non-experimental research design, survey research methods for data collection, and quantitative data and analysis methods.

The non-experimental research design picked for this study is the exploratory research design. This is a research design whose main intention is to define a problem in order to have an accurate examination or real hypotheses that comes from practical ideas (Kothari, 2009). The exploratory research design will help collect data through the use of survey questionnaires for analysis. Exploratory quantitative research is appropriate for this study because it will examine discrete and continuous data as students self-report how many social media platforms they use, and the amount of time spent in a week and per day on social media platforms plus the amount of time spent on different digital devices. It will help to determine if the use of social media platforms and the amount of time spent on them has any impact on their academic performance. This study will

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explore and compare these effects before Covid 19, during Covid 19, and after Covid 19 as students report their core subjects' scores during those particular periods.

The study will use quantitative data gathered by the use of the survey questionnaires. According to Kothari (2009), quantitative research is used for measuring the quantity, in the case of experiences that be conveyed in terms of quantity which is applicable in this case. Thus, the data collected will be analyzed quantitatively to help answer the research questions. The survey research which is also called the sample surveys, examines the frequency and relationships between two variables and is the most appropriate for the collection of the quantitative data through the use of questionnaires. Based on a survey questionnaire, where students will fill out an online questionnaire.

Population and Participation

The study participants will be students from Maxwell Adventist Academy in Kenya which currently had 117 students from 7th to the 12th grades enrolled for the two semesters of the academic year 2021/2022. Out of the 117 students, 46 are females while 71 are males with their ages ranging from 12 to 19 years old. Table 1 gives a summary of the distribution of the student population per class.

Table 1: Middle and High School Population at Maxwell Adventist Academy, 2021-2022

Grade	Students (N)
7	7
8	13
9	27

10	18
11	28
12	24

Invitation to participate in the survey will be during Social Studies for class 7 and 8 students, Study skill class tine for grade 9 students, Personal finance class time for 10-grade students, Accounting 1 class time for grade 11 students, and Economics class time for grade 12 students.

Research Objectives

The objective of this study is to determine the amount of time spent on social media and time spent using digital devices and find out if it correlates to academic performance on middle and high school students. The study will further seek to find out if the amount of time spent on social media and digital devices has increased during COVID 19 and post COVID 19 and find out if it impacts academic performance on middle and high school students.

Hypothesis

Previous research studies have demonstrated a negative relationship between students' time spent using social networking and their academic performance. Students who spent more time on their smartphones, digital devices and engaged in social media were found to be performing poorly academically, specifically in their exams and assignments. (Lepp et al., 2015, p. 5) Additionally, the scant research published on education and the COVID-19 pandemic has indicated a negative relationship between those two variables.

Based on this information, the following is the study null hypothesis:

H₀1: There is no significant relationship between the time spent of social media and digital devices with academic performance for middle and high school students.

Definition of Variables

This study focuses on three variables – digital devices, social media during and post COVID-19 pandemic, and academic performance.

Digital devices and social media during and post Covid 19 are the independent variables for this study while academic performance is the dependent variables. This study adopted the definition of digital devices used in research from Prescott et al. (2012). Their definition of digital devices included smartphones, iPods, laptops, computers, tablets, and eBook readers. In this study, gaming stations and television were added to the list.

Research from Giunchiglia et al. (2018) defined social media as technology applications used to share textual, image, and audio content and interact remotely with other people on social network sites. It is assumed in this study that for one to visit a social network site, one must have a digital device. The two go hand in hand.

Instrumentation

An online survey questionnaire will be used in this study. The survey online instrument will be prepared using the Andrews University Class Climate website. https://www.andrews.edu/classclimate/online.php?p=Media22

To represent and measure the usage of digital devices and social media usage, the study will adopt the method used by Jamal J. Al-Menayes in his research of measuring

the number of hours the students use social media and digital devices per day. (Al-Menayes, 2015).

The students will be asked five closed types of questions to identify the most used digital device, the respondent will just answer yes or no. The last t question will be measuring the number of hours spent using digital device on the of less than 30 minutes to 1 hour per day, 2-4 hours per day, 4-6 hours per day, and more than 6 hours per day.

The students will be asked multiple choice on social media, first, will the number of social media they have an account from 1 to 7, the next they will be asked the number of times they look at social media platforms rating from not every day to more than 10 times a day. For the next question the students will choose the time they spent on social media rating from (less than 30 minutes), (30-1 hour), (2-3 hours), (3-4 hours), and (more than 4 hours).

This study identified academic performance as a dependent variable. In their research, Kirschner and Karpinski used the actual accumulative GPA provided by the students. This research will adopt the same methods to measure academic performance by asking the student to provide the last semester's accumulative GPA. The maximum is 4.0

Data Collection

The data will be collected during social studies class for grade 7&8, study skills class for grade 9 students, Personal finance class time for 10-grade students, Accounting 1 class time for grade 11 students, and Economics class time for grade 12 students. Participants will be given an overview of the survey. The participant will be informed

only that the study is investigating social media and digital device usage association with acaemic performance.

Since the study involves personal information, the participant will be assured confidentiality of their responses to the survey and they will fill their response as anonymous. The survey will be label to help identify the students and match them with their academic performance so as not to reveal their identity.
As an incentive for the participant will be given 10 extra points in respective classes

The consent form will be issued to every participant before the online survey.

Appendix B

Data Analysis

Once the data has been collected, they will be coded for easy entry. The coded data will be entered into the SPSS program for analysis as guided by the study objectives and research questions. The data will be analyzed both descriptively and by use of inferential statistics. Descriptive data will be used to describe the respondents' demographics while the inferential statistics will be used to determine the impact of the independent variable on the dependent variable and for testing the hypothesis. A regression analysis will be run to help test the hypothesis and determine the effect of the independent variable on the dependent variable. The information gathered from these analyses will be used in answering the research questions and reaching reliable conclusions on the study.

CHAPTER 4

ANALYSIS/RESULTS

The survey was analyzing the amount of time students spent on social media and digital devices to see if those variables are associated with academic performance in grade 7 to 12 students from a private Christian school. The 119 respondents in the study were asked to indicate their gender, age, grade, current GPA, their MAP (measures of academic progress) achievements in English, Math, and Science and the time they spend preparing for quizzes and assignments per day.

Demographics

Table 1:

Group	Frequency	Percent	Total
Female	46	41.1	
Male	66	58.9	112
Age			
11	1	0.9	
12	10	8.7	
13	11	9.6	

14	17	4.8	
15	24	20.9	
16	27	23.5	
17	18	15.7	
18	6	5.2	
19	1	0.9	115

Grade			
7	6	5.3	
8	12	10.5	
9	28	24.6	
10	18	15.8	
11	28	24.6	
12	22	19.3	114

The survey was given to 119 students, 46 were female and 66 were male and 7 did not respond to the question on gender. The age of the students ranged from 11 to 19 with 115 responses. Respondents at the age of 16 accounted for 23.5% of the participants. Five participants did not respond to this question. 7 of the respondents representing (6%) never indicated their gender. It can be therefore, deduced that majority of the respondents are males.

According to demographic table 1 students (0.09%) of the respondents indicated to be 11 years old, 10 (9%) indicated to be 12 years old, 11(10%) indicated to be 13 years old, 17 (15%) indicated to be 14 years old, 24 (21%) indicated to be 15 years old, 27 (23%) indicated to be 16 years old, 18 (16) indicated to be 17 years old, 6 (5%) indicated to be 18 years old, while 1 (0.9%) indicated to be 19 years old. 4 (3%) of the respondents failed to indicate their ages. It can therefore, be deduced that largest group of the respondents were 16 years old.

According to the grades 6 (5%) of the respondents indicated to be in grade 7, 12 (10%) indicated to be in grade 8, 28 (24%) indicated to be in grade 9, 18(15%) indicated to be in grade 10, 28(24%) indicated to be in grade 11, while 22 (19%) indicated to be in grade 12. 5 (4%) of the respondents failed to indicate their grades in school. It can therefore, be deduced that the two largest groups of the respondents were in grades 9 and 11

The purpose of this study was to investigate the effects of the amount of time spent using entertainment electronic devices and social media and find out if it is correlated to poor academic performance in high school students. Specifically, the study aimed to focus on high school students from grade 9 to 12 grade, age between 14 to 18. Although, there are studies done on investing the effects of social media and digital devices on children (van den Eijnden et al., 2018, Sharif et al., 2010) with the increase of internet use during COVID 19 (Branscombe, 2020), this study opted to investigate the difference on the level of the impact of time spend using social media and digital devices pre and post COVID 19 among students in high school. The findings of the study are discussed below as per the study research questions.

What amount of time is spent on social media and the entertainment of electronic

devices by high school students?

The first   research question sought to find out the amount of time high school

students spend on social media and the entertainment of electronic devices. The first

questions the respondents were asked was to state how much time they spent on social

media per day. Their responses are summarized in table 2.

Table 2

How much time do you spend on social media per day?

Group	Frequency	Percent
Less than 30 minutes	9	7.9
30 - 59 minutes	12	10.5
1 - 2 hours	12	10.5
2 -3 hours	26	22.8
3 - 4 hours	22	19.3
More than 4 hours	33	28.9
Total	114	100

Note n=119, 5 missing value

According to table 2, 8% of the respondents indicated that they spend less than 30

minutes per day on social media, 10% spent between 10-59 minutes per day, 10% spend

between 1-2 hours per day, 21% spend between 2-3 hours, 19% spend between 3-4 hours

while 28% spend more than 4 hours per day on social media per day. It can therefore, be

concluded that majority of the students spend more than 4 hours per day on social media.

This is in agreement with what Lepp et al (2015) found out. They discovered that most students spend more and more time on social media and other electronic devices. Statista (2021) also indicated that most youths aged between 13 and 19 spend most of their time on social media such as Snapchat, TikTok, Instagram, Twitter, Facebook, YouTube, WhatsApp, Pinterest, and Tumblr.

The respondents were further questioned on when they do access social media. They were asked whether they access social media during their free time or not. Their responses are summarized in table 3.

Table 3

When do you access social media?

	Frequency	**Percent**
Anytime	29	25.2
During free time	86	74.8
Total	115	100

Note n=119, 4 missing value

As per table 3 it can be seen that 24% of the respondents indicated that they do access social media any time at school while 72% indicated that they do access social media during their free time. It can therefore, be deduced that majority of students do access social media during their free time. This is an indication that students will access social media and other entertainment devices any time they are free and this can be considered a result of addiction as found by Griffiths (2000) who stated that social media

addiction existed among the young students and gave a warning of its growth. Similar findings are seen in the studies by Mustafa et al. (2020) who concluded that an increase in social media dependency among high school students that leads to media addictions.

The respondents were further asked to state if they access social media while at school or not.

Table 4:

When do you access social media - At school

	Frequency	**Percent**
Not at school	113	98.3
While still at school	2	1.7
Total	115	100

Note n=119, 4 missing value

Table 4 Shows that 95% of the respondents indicated that they do not access social media while at school, while 2% indicated that they do access social media while at school. It can be concluded that majority of the students do not access social media while at school. This is due to the fact that the school does not allow digital devices such as cell phones, iPad and laptops during class hours

The respondents were asked to indicate whether they do access social media during social occasions or not. Table 5 is a summary of their responses.

Table 5

When do you access social media - Social occasion

	Frequency	Percent
During social occasions	85	73.9
Not during social occasions	30	26.1
Total	115	100

Note n=119, 4 missing value

As per table 5 it can be seen that 71% of the respondents indicated that they do access social media during social occasions, while 25% indicated that they do access social media during social occasions. This shows that a majority of students do access social media during social occasions.

The respondents were further asked to indicate if they do access social media during meal times. Their responses are summarized in table 6

Table 6

When do you access social media - Meal times

	Frequency	Percent
Not during meal times	95	82.6
During meal times	20	17.4
Total	115	100

Note n=119, 4 missing value.

Table 6 shows that 82% of the respondents indicated that they do not access social media during meal times while 17% indicated that they do access social media during

meal times. From the table   , it can therefore, be deduced that most of the students do not access social media during meal times.

The respondents were also asked to state if they do access social media during any spare moment they do have. Table 7 summarizes their responses.

Table 7

When do you access social media - Any spare moment

	Frequency	Percent
Not during spare moment	63	54.8
Any spare moment	52	45.2
Total	115	100

Note n=119, 4 missing value

Table 6 shows that 55% of the respondents stated that they do not access social media during their spare moment while 45% stated that they do access social media during their spare moment. It can therefore, be concluded that most of the students do not access social media during any spare moment.

What is the academic performance of high school students who spend more than time on social media and entertainment on electronic devices?

The second research question of the study sought to find out the academic performance of high school students who spend more time on social media and entertainment devices. The researcher was given students academics reports from the registrar office. were first of all asked to indicate whether they spend time on social media and entertainment devices or not, of which they all responded in the affirmative.

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Their academic performance was sought in terms of core subjects; Math, English and

Science current semester grades, GPA and then the different MAP achievement

percentile in Math, English and Science.

The respondents' academic reports were provided to indicate their current GPA

and summarized in the table 8.

Table 8   is a summary of their responses.

Table 8

What is your current GPA?

	Group	Frequency	Percent
	less than 1	2	1.7
	1-2.99	7	6
	3	31	26.5
	Above 3	77	65.8
Total		117	100

Note n=119, 2 missing value

According to table 8, 2 (2%) of the respondents academic report indicated that

their GPA was less than 1, 7 (6%) had a GPA of 1-1, 31(26%) had a GPA of 3 while

77(65%) had a GPA of 3-4. 2 (2%) of the respondents never indicated their GPAs. It can

therefore, be deduced that majority of the respondents have a GPA of between 3 and 4.

The respondents' academic reports were provided to indicate their current grades

in English, Math and Science. Their current grades in English are summarized in table 9.

Table 9

What is your current grade in English?

Group	Frequency	Percent
A	13	11.1
A-	21	17.9
B+	17	14.5
B	18	15.4
B-	17	14.5
C+	7	6
C	12	10.3
C-	3	2.6
D+	2	1.7
D	5	4.3
D-	1	0.9
F	1	0.9
Total	117	100

Note n=119, 2 missing value

According to table 9, 11% of the students got an A in English, 18% an A-, 15% B+, 15% B, 14% B-, 6% C+, 10% C, 3% C-, 2% D+, 4% D,1% D-, and another 1% F. This means that a majority of high school students got an A in English.

The respondents' academic reports were provided to indicate their current grades in Math are summarized in table 19.

Table 10

What is your current grade in Math?

Group	Frequency	Percent
A	21	17.9
A-	13	11.1
B+	10	8.5
B	12	10.3
B-	18	15.4
C+	10	8.5
C	8	6.8
C-	4	3.4
D+	5	4.3
D	4	3.4
D-	4	3.4
F	8	6.8
Total	117	100

Note n=119, 2 missing value

Table 10, shows that 18% of the respondents indicated that they got an A in Math, 11% got an A-, 9% a B+, 10% a B, 15% a B-, 9% a C+, 7% a C, 4% a C-, 4% a D+, 3% a D, 3% a D- and 7% a F. This indicates that a majority of the students got an A in Math.

The respondents' academic reports were provided to indicate their current grades in science are summarized in table 11.

Table 11

What is your current grade in science?

Group	Frequency	Percent
A	26	22.2
A-	14	12
B+	14	12
B	24	20.5
B-	7	6
C+	11	9.4
C	8	6.8
C-	3	2.6
D+	4	3.4
D	3	2.6
D-	2	1.7
F	1	0.9
Total	117	100

Note n=119, 2 missing value

As per table 11, 22.2% of the students indicated that they got an A in Science, 12% got an A-, 12% a B+, 21% a B, 6% a B-, 9% a C+, 7% a C, 3% a C-, 3% a D+, 3% a D, 2% a D- and 1% got a F. It can therefore, be concluded that a majority of students got an A and B in science.

The respondents' MAP reports were provided to indicate their NWEA MAP Fall 22 results in English, Math and Science. Their MAP Fall 22 grades in English are summarized in table 12.

Table 12

What is your MAP achievement percentile in Math?

Group	Frequency	Percent
greater than 80%	22	18.8
61-80%	27	23.1
41-60%	32	27.4
21-40%	25	21.4
less than 21%	11	9.4
Total	117	100

Note n=119, 2 missing value

According to table 12, 22 (9%) of the respondents' MAP results indicated that their MAP percentile in Math was greater than 80%, 27(23%) had a MAP percentile of between 61 and 80%, 32 (27%) had a MAP percentile in math of 41-60%, 25 (21%) had a MAP percentile of 21-40%, while 11 (10%) indicated that their MAP percentile in math of less than 21%. 2 (2%) of the respondents failed to indicate their MAP achievement percentile in Math. It can therefore, be concluded that majority of the students have a MAP achievement percentile of 41-60% in Math.

The respondents MAP results were provided, and their MAP achievement percentile in English are summarized in Table 13.

Table 13

What is your MAP achievement percentile in English?

Group	Frequency	Percent
greater than 80%	40	34.2
61-80%	29	24.8
41-60%	30	25.6
21-40%	13	11.1
less than 21%	5	4.3
Total	117	100

Table 13 shows that 40 (34%) of the respondents had a MAP percentile of greater than 80% in English, while 29 (24%) have 61-80%, 30 (25%) have 41-60%, 13 (11%) have 21-40% and 5 (4%) have a MAP percentile of less that 21% in English. 2 (2%) of the responses never indicated their MAP percentile in English. It can therefore, be concluded that most of the students have MAP percentile of greater than 80% in English.

Table 14

What is your MAP achievement percentile in science?

	Frequency	Percent
Greater than 80%	33	27.7%
61-80%	33	27.7%
41-60%	32	26.9%

	N	%
21-40%	13	10.9%
less than 21%	6	5.0%
Missing System	2	1.7%

Table 14 shows that 33 (27.7%) of the respondents had a MAP percentile of greater than 80% in science, while 33 (27.7%) have 61-80%, 32 (26.9%) have 41-60%, 13 (10.9%) have 21-40% and 6 (5%) have a MAP percentile of less that 21% in English. 2 (1.7%) of the responses never indicated their MAP percentile in science. It can therefore, be concluded that majority of the students have MAP percentile of 61 to greater 80 percentile in science.

Digital Devices Usage

The students were asked how often they use their digital devices for entertainment

Table 14

Television

	N	%
Never	28	23.5%
Once a week	18	15.1%
Twice a week	15	12.6%
More than twice a week	26	21.8%
Daily	26	21.8%
Missing System	6	5.0%

Table 14 Shows that 23.5% of the respondents indicated that they never use televisions, 15.1% indicated that they use televisions once a week, 12.6% use televisions twice a week, while 21.8% use televisions more than twice a week and daily. It can therefore, be deduced that majority of the students in high school never used television as an entertainment device.

The respondents were then asked to indicate how much time they put in on gaming station. Their responses are summarized in table.

Table 15

Gaming

	N	%
Never	55	46.2%
Once a week	6	5.0%
Twice a week	9	7.6%
More than a week	23	19.3%
Daily	18	15.1%
Missing System	8	6.7%

Table 15 shows that 46.2% of students never use gaming station, 5% indicated that they use gaming station once a week, 7.6% indicated that they use gaming station twice a week, while 19.3% indicated that they use gaming station more than twice a week. From this information, it can be deduced that majority of students in high school never used gaming station as an entertainment device.

The respondents were then requested to state their use of mobile phone. Their responses are summarized in table 16

Table 16

Mobile Phone

	N	%
Never	2	1.7%
Once a week	2	1.7%
Twice a week	2	1.7%
More than twice a week	28	23.5%
Daily	81	68.1%
Missing System	4	3.4%

Table 16, shows that 1.7% of the respondents indicated that they never used mobile phones, 1.7% of the respondents indicated once a week, 1.7% of the respondents indicated used mobile phones twice a week, 23.5% used mobile phones more than twice a week, while 68.1 of respondents reported to use mobile phone daily. It can be concluded that majority of high school students used mobile phones on a daily basis. This can be attributed to the fact that a mobile phone is the basic mode of communication and also performs several functions including social media and entertainment.

The respondents were further asked to indicate their usage of computers both desktop and laptops. Their responses are as show in table 17

Table 17

Computer Laptop

	Frequency	Percent
Never	4	3.4%
Once a week	13	10.9%
Twice a week	14	11.8%
More than twice a week	31	26.1%
Daily	49	41.2%
Missing System	8	6.7%

Table 17 shows that 3.4% of the respondents indicated that they never used computers. 10.9% indicated that they used computers once a week, 11.8 % twice a week, 26.1% indicated that they used computers more than once a week, while 41.2% of the respondents indicated that they use laptop and computers at daily basis. It can therefore be concluded based on the information from the table that majority of high school students uses computers and laptop on a daily basis. It is evident that based on this data that most high school students increased their use of computers.

Amount of Time Spent on Social Media and Entertainment During COVID 19

The respondents were then requested to indicate how much time they spent on social media in general before COVID 19. Their responses are summarized in table 18

Table 18

Time spent on social media before COVID 19

Group	Frequency	Percent
Two hours or less	33	28.9
Between two to four hours	48	42.1
More than four hours	33	28.9
Total	114	100

Note n=119, 5 missing value

As per table 18, 29% of the respondents indicated that they spent two hours or less daily on social media before COVID 19, 42% spent between two to four hours daily on social media while 28% spent more than four hours daily on social media. It can therefore, be concluded that majority of high school students spend more than two hours daily on social media.

The third research question of the study sought to find out if the amount of time spent on social media and entertainment devices increased during COVID 19 in high school students. The respondents were asked to indicate their usage of social media and entertainment devices during COVID 19 compare before COVID 19. Table 19, is a summary of their responses.

Table 19

Before covid 19 compared post Covid 19

	N	%

Less more to less	18	15.1%
about the same	17	14.3%
More to much more	80	67.2%
Missing System	4	3.4%

Table 19 indicates that 15.1% of the respondents spent less more to less time on social media and entertainment devices during COVID 19, 14.3% spent about the same time on social media and entertainment devices during COVID 19, while 67.2% of the respondents spent more to much time on social media and entertainment devices during COVID 19. It can therefore, be concluded that a majority of the students did spend more to much more time on social media and entertainment devices during COVID 19.

Time Spent on Social Media and Entertainment Devices Post-COVID 19

Objective four sought to discover if the amount of time spent on social media and entertainment on electronic devices increased post-COVID 19 in high school students. The respondent were asked to indicate if the time they spent on social media and entertainment on electronic devices post COVID 19 had increased or not. Their responses are summarized in table 20

Table 20

Time spent on social media compare before to after Covid

	N	%
Less more to less	37	31.1%

About the same	27	22.7%
More to much more	51	42.9%
Missing System	4	3.4%

Table 20, shows that 31.1% of the respondents indicated that they used social media post COVID less more to less, 22% indicated that their usage of social media and entertainment post COVID 19 was about the same with during COVID 19, while 42.9% indicated that their usage of social media and entertainment on electronic devices was more to much more post COVID 19. This therefore, is a clear indication that high school students increased their usage of social media and entertainment on electronic devices by spending more time on them post COVID 19.

Time Spent on Social Media and Digital Devices and Academic Performance of Students

Research question 5 sought to find out if the time spent on social media and entertainment devices could be one of the causes of poor academic performance of high school students. Crosstabs were run between the grades attained in the selected subjects and the time spent on social media and entertainment devices. A chi square test was also run for the same to help determine if time spent on social media and entertainment devices can be a predictor of academic performance of high school students. Cross-tabulation is one of the most useful analytical tools and is a main-stay of the market research industry. One estimate is that single variable frequency analysis and cross-tabulation analysis account for more than 90% of all research analyses. Cross-tabulation analysis, also known as contingency table analysis, is most often used to analyze

categorical (nominal measurement scale) data. A cross-tabulation is a two (or more) dimensional table that records the number (frequency) of respondents that have the specific characteristics described in the cells of the table. Cross-tabulation tables provide a wealth of information about the relationship between the variables. Cross-tabulation analysis has its own unique language, using terms such as "banners", "stubs", "Chi-Square Statistic" and "Expected Values." A typical cross-tabulation tables comparing the two hypothetical variables "grade recorded" with "Time spent on social media" are shown below.

The Chi-square statistic is the primary statistic used for testing the statistical significance of the cross-tabulation table. Chi-square tests whether or not the two variables are independent. If the variables are independent (have no relationship), then the results of the statistical test will be "non-significant" and we "are not able to reject the null hypothesis", meaning that we believe there is no relationship between the variables. If the variables are related, then the results of the statistical test will be "statistically significant" and we "are able to reject the null hypothesis", meaning that we can state that there is some relationship between the variables. The chi-square statistic, along with the associated probability of chance observation, may be computed for any table. If the variables are related (i.e. the observed table relationships would occur with very low probability, say only 5%) then we say that the results are "statistically significant" at the ".05 or 5% level". This means that the variables have a low chance of being independent.

Table 22

English grade recoded * time spend on social media recorded Crosstabulation

	time spend on social media		Total

			two hours or less	between two to four hours	more than four hours	
English grade recoded	B- and Higher	Count	22	39	20	81
		% within English grade recoded	27.2%	48.1%	24.7%	100.0%
	C+ and Lower	Count	11	9	11	31
		% within English grade recoded	35.5%	29.0%	35.5%	100.0%
Total		Count	33	48	31	112
		% within English grade recoded	29.5%	42.9%	27.7%	100.0%

In table 22, a crosstabulation of "English grade recorded*Time spent on social media" is presented. We can see that "English grade recorded" is first in the syntax and appears in rows while "Time spent on social media" is second in the syntax and appears in the columns. In the syntax, we have also specified the cells to include count and total which are the count of the observations and the percentages of the observations of the total valid sample size for this analysis. As per table 22, 27.2% of the respondents who spent two hours or less on social media got an English recorded grade of B- and higher, 48.1% who spent between 2 to 4 hours on social media got a B- and higher, and 24.7% of respondents who spent more than 4 hours got B- and higher. 35.5% of the respondents who spent two hours or less on social media got a C+ and lower, 29% who spent two hours to four hours on social media, and 35.5% who spent more than four hours. got a C+ and lower English grade recorded.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.382[a]	2	.184
Likelihood Ratio	3.474	2	.176
Linear-by-Linear Association	.024	1	.878

			N of Valid Cases	112		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.58.

In the third output chart, "Chi-Squared Tests", SPSS gives us a number of different tests for the chi-squared test. We will focus on the first row, "Pearson Chi-squared", which includes the columns "Value", the calculated chi-squared value, "df", the degrees of freedom for the test, and the "Asymptotic Significance (2-sided), which is the two tailed significance level. We can see that the chi-squared value is 3.382, the degrees of freedom is 2 and the significance level is 0.184. Since we will be using the standard 0.05 or below as our cutoff point for the significance level, we can see that 0.184 is higher than 0.05 we can then conclude there is No statistical significance of the chi-squared test. This means that there is no statistically significant relationship between the variables "English grade recorded" and "Time spent on social media" in this dataset.

Table 23

Math grade recoded * time spend on social media recorded - Crosstabulation

			time spend on social media recorded			Total
			two hours or less	between two to four hours	more than four hours	
Math grade recoded	B- and Higher	Count	17	35	18	70
		% within Math grade recoded	24.3%	50.0%	25.7%	100.0%
	C+ and Lower	Count	16	13	13	42
		% within Math grade recoded	38.1%	31.0%	31.0%	100.0%
Total		Count	33	48	31	112
		% within Math grade recoded	29.5%	42.9%	27.7%	100.0%

In table 23, a crosstabulation of "Math grade recorded*Time spent on social media" is presented. We can see that " Math grade recorded" is first in the syntax and appears in rows while "Time spent on social media" is second in the syntax and appears in the columns. In the syntax, we have also specified the cells to include count and total which are the count of the observations and the percentages of the observations of the total valid sample size for this analysis. As per table 23, 24.3% of the respondents who spent two hours or less on social media got a Math recorded grade of B- and higher, 50% who spent between 2 to 4 hours on social media got a B- and higher, and 25.7% of respondents who spent more than 4 hours got B- and higher. 38.1% of the respondents who spent two hours or less on social media got a C+ and lower, 31% who spent two hours to four hours on social media, and 31% who spent more than four hours. got a C+ and lower Math grade recorded.

Table 24

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.181[a]	2	.124
Likelihood Ratio	4.235	2	.120
Linear-by-Linear Association	.335	1	.563
N of Valid Cases	112		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.63.

In the table 24 output, "Chi-Squared Tests", SPSS gives us a number of different tests for the chi-squared test. We will focus on the first row, "Pearson Chi-squared",

which includes the columns "Value", the calculated chi-squared value, "df", the degrees of freedom for the test, and the "Asymptotic Significance (2-sided), which is the two tailed significance level. We can see that the chi-squared value is 4.181, the degrees of freedom is 2 and the significance level is 0.124. Since we are using the standard 0.05 or below as our cut off point for the significance level, we can see that 0.124 is higher than 0.05, we can conclude that there is No statistical significance of the chi-squared test. This means that there is no statistically significant relationship between the variables "Math grade recorded" and "Time spent on social media" in this dataset

Table 25

Science grade recoded * time spend on social media recorded - Crosstabulation

			time spend on social media recorded			
			two hours or less	between two to four hours	more than four hours	Total
Science grade recoded	B- and Higher	Count	26	35	20	81
		% within science grade recoded	32.1%	43.2%	24.7%	100.0%
	C+ and Lower	Count	7	13	11	31
		% within science grade recoded	22.6%	41.9%	35.5%	100.0%
Total		Count	33	48	31	112
		% within science grade recoded	29.5%	42.9%	27.7%	100.0%

In table 25, a crosstabulation of "Science grade recorded*Time spent on social media" is presented. We can see that "Science grade recorded" is first in the syntax and appears in rows while "Time spent on social media" is second in the syntax and appears in the columns. In the syntax, we have also specified the cells to include count and

total which are the count of the observations and the percentages of the observations of the total valid sample size for this analysis. As per table 25, 32.1% of the respondents who spent two hours or less on social media got a science recorded grade of B- and higher, 43.2 who spent between two to four hours on social media got a B- and higher, and 24.7% of respondents who spent more than 4 hours got B- and higher. 22.6% of the respondents who spent two hours or less on social media got a C+ and lower, 41.9% who spent two to four hours on social media, and 35.5% who spent more than four hours. got a C+ and lower science grade recorded.

Table 25

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.641[a]	2	.440
Likelihood Ratio	1.634	2	.442
Linear-by-Linear Association	1.605	1	.205
N of Valid Cases	112		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.58.

In the third output chart, "Chi-Squared Tests", SPSS gives us a number of different tests for the chi-squared test. We will focus on the first row, "Pearson Chi-squared", which includes the columns "Value", the calculated chi-squared value, "df", the degrees of freedom for the test, and the "Asymptotic Significance (2-sided), which is the two tailed significance level. We can see that the chi-squared value is 1.641, the degrees of freedom is 2 and the significance level is 0.440. Since we will be using the

standard 0.05 or below as our cutoff point for the significance level, we can see that

0.440 is much higher than 0.05 we can then conclude there is No statistical significance

of the chi-squared test. This means that there is no statistically significant relationship

between the variables "Science grade recorded" and "Time spent on social media" in this

dataset.

Table 26

MAP English * time spend on social media recorded - Crosstabulation

			time spend on social media recorded			Total
			two hours or less	between two to four hours	more than four hours	
MAP English	Above Average	Count	18	33	15	66
		% within MAPEnglishV2	27.3%	50.0%	22.7%	100.0%
	Average	Count	7	10	12	29
		% within MAPEnglishV2	24.1%	34.5%	41.4%	100.0%
	Below Average	Count	8	5	4	17
		% within MAPEnglishV2	47.1%	29.4%	23.5%	100.0%
Total		Count	33	48	31	112
		% within MAPEnglishV2	29.5%	42.9%	27.7%	100.0%

In table 26, a crosstabulation of "MAP English Recorded *Time spent on social

media" is presented. We can see that "MAP English recorded" is first in the syntax and

appears in rows while "Time spent on social media" is second in the syntax and appears

in the columns. In the syntax, we have also specified the cells to include count and

total which are the count of the observations and the percentages of the observations of

the total valid sample size for this analysis. As per table 26, 27.3% of the respondents

who spent two hours or less, while 50% who spent between two to four hours and 22.7%

of the respondents who spent four hours and more on social media got above average in MAP English recorded. 24.1% of the respondents who spent two hours or less, while 34.5% who spent between two to four hours and 41.4% of the respondents who spent four hours and more on social media got average in MAP English recorded. 47.1% of the respondents who spent two hours or less, while 29.4% who spent between two to four hours and 23.5% of the respondents who spent four hours and more on social media got below average in MAP English recorded.

Table 27

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.807[a]	4	.146
Likelihood Ratio	6.417	4	.170
Linear-by-Linear Association	.099	1	.753
N of Valid Cases	112		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 4.71.

The table 27 above focus on the first row, "Pearson Chi-squared", which includes the columns "Value", the calculated chi-squared value, "df", the degrees of freedom for the test, and the "Asymptotic Significance (2-sided), which is the two tailed significance level. We can see that the chi-squared value 6.807, the degrees of freedom is 4 and the significance level is 0.146. Since we will be using the standard 0.05 or below as our cut off point for the significance level, we can see that 0.146 is higher than 0.05 we can then

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conclude there is No statistical significance of the chi-squared test. This means that there is no statistically significant relationship between the variables "MAP English recorded" and "Time spent on social media" in this dataset.

Table 28

MAP Math * time spend on social media recorded - Crosstabulation

			time spend on social media recorded			
			two hours or less	between two to four hours	more than four hours	Total
MAP Math	Above Average	Count	13	21	13	47
		% within MAPMath	27.7%	44.7%	27.7%	100.0%
	Average	Count	7	17	6	30
		% within MAPMath	23.3%	56.7%	20.0%	100.0%
	Below Average	Count	13	10	12	35
		% within MAPMath	37.1%	28.6%	34.3%	100.0%
Total		Count	33	48	31	112
		% within MAPMath	29.5%	42.9%	27.7%	100.0%

In table 28, a crosstabulation of "MAP Math Recorded *Time spent on social media" is presented. We can see that "MAP Math recorded" is first in the syntax and appears in rows while "Time spent on social media" is second in the syntax and appears in the columns. In the syntax, we have also specified the cells to include count and total which are the count of the observations and the percentages of the observations of the total valid sample size for this analysis. As per table 28, 27.7% of the respondents who spent two hours or less, 44.7% who spent between two to four hours and 27.7% of the respondents who spent four hours and more on social media got above average in MAP Math results. 23.3% of the respondents who spent two hours or less, 56.7 two to

four hours, and 20% who spent more than four hours got average of their MAP Math results. 37.1% of the respondents who spent two hours or less, while 28.6% who spent two to four hours and 34.3% of the respondents who spent four hours and more on social media got below average in MAP Math results.

Table 29

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.364[a]	4	.252
Likelihood Ratio	5.470	4	.242
Linear-by-Linear Association	.032	1	.859
N of Valid Cases	112		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.30.

The table 29, above focus on the first row, "Pearson Chi-squared", which includes the columns "Value", the calculated chi-squared value, "df", the degrees of freedom for the test, and the "Asymptotic Significance (2-sided), which is the two tailed significance level. We can see that the chi-squared value 5.364, the degrees of freedom is 4 and the significance level is 0.252. Since we will be using the standard 0.05 or below as our cut off point for the significance level, we can see that 0.252 is very higher than 0.05 we can then conclude there is No statistical significance of the chi-squared test. This means that there is no statistically significant relationship between the variables "MAP Math recorded" and "Time spent on social media" in this dataset.

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Table 30

MAP Science * time spend on social media recorded - Crosstabulation

			two hours or less	between two to four hours	more than four hours	Total
				time spend on social media recorded		
MAP Science	1.00	Count	17	32	15	64
		% within MAPScienceV2	26.6%	50.0%	23.4%	100.0%
	2.00	Count	9	13	8	30
		% within MAPScienceV2	30.0%	43.3%	26.7%	100.0%
	3.00	Count	7	3	8	18
		% within MAPScienceV2	38.9%	16.7%	44.4%	100.0%
Total		Count	33	48	31	112
		% within MAPScienceV2	29.5%	42.9%	27.7%	100.0%

In table 30, a crosstabulation of "MAP science Recorded *Time spent on social media" is presented. We can see that "MAP science recorded" is first in the syntax and appears in rows while "Time spent on social media" is second in the syntax and appears in the columns. In the syntax, we have also specified the cells to include count and total which are the count of the observations and the percentages of the observations of the total valid sample size for this analysis. As per table 30, 26.6% of the respondents who spent two hours or less, while 50% who spent between two to four hours and 23.4% of the respondents who spent four hours and more on social media got above average in MAP Science results. 30% of the respondents who spent two hours or less, while 43.3% who spent between two to four hours, and 26.7% of the respondents who spent more than four hours on social media got average in MAP Science results. 38.9% of the respondents who spent two hours or less, while 16.7% who spent two to four hours, and 44.4% of the

respondents who spent four hours and more on social media got below average in MAP

Science results.

Table 31

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.628ᵃ	4	.157
Likelihood Ratio	7.163	4	.128
Linear-by-Linear Association	.131	1	.718
N of Valid Cases	112		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 4.98.

The table 31, above focus on the first row, "Pearson Chi-squared", which includes

the columns "Value", the calculated chi-squared value, "df", the degrees of freedom for

the test, and the "Asymptotic Significance (2-sided), which is the two tailed significance

level. We can see that the chi-squared value 6.628, the degrees of freedom is 4 and the

significance level is 0.157. Since we will be using the standard 0.05 or below as our cut

off point for the significance level, we can see that 0.157 is very higher than 0.05 we can

then conclude there is No statistical significance of the chi-squared test. This means that

there is no statistically significant relationship between the variables "MAP science

recorded" and "Time spent on social media" in this dataset.

All the chi square tests run for the grades recorded and all MAP recorded and the

time spent on social media and digital devices show no significant relationship. This can

be used therefore, to retain the null hypothesis set which states that there is not significant relationship between the grade recorded by middle high school students and the time spent on social media.

CHAPTER 5

CONCLUSIONS

Discussion

The study was investigating effect of social media and digital devices on academic performance in middle and high school students. The study found the highest percentage (27%) of the participants have more that 6 social media accounts, and same as the highest percentage (28%) of participant spent more than four hours on social media. Even though, majority of participants reported to access the social media during none class time hours, the study shows 70 % of the participant access social media through mobile phone. The findings show; they have been a significant increase of 15% in students who spent more than four hours on social media after Covid 19 compared to before Covid 19, and participant reported using spending more time on social media during Covid 19 pandemic than any other times.

Ahrberg et al., (2012) found out that most teenagers are addicted to social media and entertainment devices and would grasp any opportunity they get to access it. This agrees with this study's finding that most high school students do jump to social media any time they consider to be spare time.

On the other hand; The results show the majority of students do not access social media during learning time, which confirm the conclusion of Demirbilek and Talan

(2017) that using social media while in class does not allow students' brain to process, learn and apply the information being thought in class while focusing on media.

It can be said that the use of mobile phones for social media and entertainment increased among high school students in Africa.

This confirm the research publish by Federica Laricchia that; smartphones are the most common devices among children and teens: in 2021, over 70 percent of American 12-year-olds had a smartphone. (Laricchia, 2022)

This finding is in agreement with Salzano et al. (2021) who concluded that there was an increase in the use of technology due to Covid 19 among teens and adolescents.

This was attributed to the banning of face-to-face or physical class meetings so most schools opted for online class meetings. In addition, they were an increase in the usage of technology during lockdown because it was the only means to connect with the rest of the world. The lack of enough literature on the use of social media and electronic devices in the post-Covid 19 times. It reveals a need for further studies to be explored and hence.

The research found no significant relationship between the time spent on social media and digital devices and academic performance in the study participants. Therefore, research could not reject the null hypothesis. This may be due the fact in this study is participants of this study were middle and high school students in a private Christian school in East Africa. This is a part of the world that the majority of teens and adolescent have not been exposed to a very high advanced technology compare to the west or Asia part of the world. The majority of studies that have been done on this subject most

participants were university students located in west or Asia part of the world were technology is more advanced.

The findings confirmed the findings of Regina, Ina, Suzan, Femke, and Tom in their longitudinal investigation on the impact of heavy and disordered use of games and social media on adolescents, psychological, social, and school functioning, also discovered was there is a little negative impact on academic performance as a result of using heavy social media in the adolescents.

The findings of this study indicate that most of the high school students who participated in this study have high GPAs and MAP percentiles in English and Math and this indicates high academic performance. This contradicts the findings of other studies like Lepp et al (2015) who discovered that college students who spent more time on their electronic devices and social media performed poorly in academics. Other studies that contradict this finding include Wong & Lam (2016), Al Manayes (2015) and Buito et al (2018).

This finding is in not in agreement with what Wong & Lam (2016), Al Maneyes (2015), Demirbelek & Talon (2017) and Jian (2017) discovered in their various studies on the relationship between time spent and academic performance in university students. They found out that there is a negative correlation between time spent on social media and academic performance amongst university students, meaning that if time spent on social media and electronic devices increases, academic performance on the other hand will decrease.

The findings also contradict the findings by Lepp et al (2015) who found out that college students who spent more time on their smart phones and digital devices

performed poorly in academics, especially in examinations and assignments. Liminou (2021) tried explaining why students who spend time on social media do not perform well academically. He explains that the use of electronic devices does cause destructions, increase procrastination and poor time management thus resulting in poor academic performance in college students.

However, this may be due to the facts that this study was done in a private Christian school were use of social media and access to electronic devices is restricted during class hours and meals time. Which allows students to concentrate on academics and minimizes the distractions.

Another fact is the school has put in place restrictions in their internet on accessing social media website during class our hours, laboratories and study hall time. Also, the school has policies that allows the access to electronic devices during no class hours.

This comes in agreement with many conclusions and recommendations of majority of studies in literature review Barton et al. (2018); Lepp et al. (2015); Kibona and Mgaya (2015); Karpinski et al. (2013); Al-Menayes (2015); Limniou (2021); Abdulahi et al. (2014) & Jiang (2021), who found a significant negative relationship between social media and entertainment digital devices with academic productivity and performance, and suggested the need of restrictions, and carefully creating policies that manage well the use of social media and digital devices in the learning environment. This means by the school applying the restritions and creating effective policies on a healthy use and access of social media and entertainment digital devices minimized to the point of no effects its negative effects on academic performance.

Lepp et al. (2015) in their investigation on the relationship between cell phone use and academic performance for college; in thier conclusion mentioned the importance of school administrators and educators to diligently create policies regarding cell phone usage in the learning environment. This study findings confirms that if the school has cell phone usage policies when the learning occurs, then there is no negative significant relationship between digital devices and academic performance.

The study results reveal that; when you control the access to social media and electronic devices while the learning is occurring you increase students' academic productivity and performance which removes the significant negative relationship that has been found between the two variables which has found by many studies in this research. This is in agreement with the recommendations of Demirbilek and Talan (2017) in their research on social media multitasking on classroom performance; which they found that using social media while in class does not allow students' brain to process, learn and apply the information being thought in class. Therefore, recommended the school to control the access of social media and electronic devices during lecturer to increase student's productivity and performance.

In conclusion this study found with policies and restrictions on the use and access of social media and entertainment digital devices in a school create a significant no relationship with students' academic performance.

Delimitations and Limitations

There were several delimitations and limitations to this study. First of all, the sample was delimited to a single, private, Christian school in Nairobi, Kenya. This was

aimed at increasing the likelihood of receiving an adequate number of responses, since the researcher was known to them as their teacher at the school.

A second delimitation concerned the delivery and collection of the survey items. The respondents were easily accessed both virtually and physically. This enabled the researcher to quickly retrieve the information that was needed for the study. The respondents quickly provided the time they spent on social media and entertainment devices and at the same time the researcher was able to retrieve their grades from the school records.

The primary limitation of this study was the selected sample size which may not have represented the typical student population of the whole middle and high school population. The pilot study was different in terms of cultural, geographical and demographical, the sample still did not likely represent middle and high school time spent on social media and digital devices and academic achievement in way that we can conclude that social media and digital devices they are not predictors of academic performance. It is believed that a larger sample size would have provided greater chance to help generalize the findings to populations other than the one small private school.

A second limitation that was faced was the studies that were reviewed; Barton et al. (2018); Lepp et al. (2015); Kibona and Mgaya (2015); Karpinski et al. (2013); Al-Menayes (2015); Limniou (2021); Abdulahi et al. (2014) & Jiang (2021) showed an increase in social media and electronic device usage among high school students with different negative effects academically and emotionally but never provided more ways teachers or students can use social media and electronic devices in a healthy ways that can still contribute to students' academic performance. Also, these studies did not

provide any ways that the teachers and parents can intervene in case they identify social

media and entertainment electronic devices used as a predictor of their student/child's

academic performance. The results in the study shows the importance to acknowledge the

negative effects of social media and digital devices can have on academic performance if

not used properly, and also the necessity for schools to put in place effective restrictions,

and policies that allows students access and use social media and digital devices, but it's

limited in specific healthy and proper ways students can use social media and digital

devices.

It was evident that these studies have focused on investigating the effects of social

media and the use of entertainment electronic devices on college students and not the

whole student population is represented. They were few studies done on the effects of

social media and digital devices usage among kindergarten, lower level of elementary,

middle and high school students, considering the fact that after Covid 19 more middle

and high school students age have more access to social media and entertainment devices.

(Laricchia, 2022)

Implications to the Field

The findings of this study have several implications to the fields of teaching and

research. To begin with, the importance of schools to put in place restrictions and policies

to minimize the negative effects of use social media and digital devices on academic

performance. This study was one of the pieces of evidence that is possible.

Another implication of this study most students spent on social media an average

of 2-3 hours a day. The findings further show that most students do spend most of their

time on social media and digital devices during their free time which is likely when they

are at home or in the dorm. This means that schools can find ways to limit time students spend on social media and digital devices, that cannot affect their academic performance. The study also reveals that there is no significant relationship between the time spent on social media and entertainment devices, and academic performance of high school students. This means that high school students' academic performance is not likely be determined by the time they spend on social media and digital devices if there is a limited access

The other finding is that high school students increased the time spent on social media and digital devices during COVID 19 pandemic and further increased their usage of the same post COVID 19 pandemic. This increase can be attributed to the movement of face-to-face interactions to virtual interactions in aspects of life during and after COVID 19. This is an important finding that shows how technology is advancing and that educators need to finds ways to embrace it and use it to enhance student's learning and also teaching students more healthy ways to use social media and digital devices for their advantage. Also, it is important that studies will find ways to break down academic versus social uses of technology.

Further Study

This study can lead to further areas of research such as; Time spent on social media alone without involving other digital devices and academic achievement. Since time spent on social media and digital devices is increasing among young children and tweens; further study is needed on the time spent on social media and digital devices academic performance of elementary learners.

Further studies are needed on how social media and entertainment devices can be utilized to improve academic performance amongst high school students, especially now that it is proven that they do spend a lot of time on social media and entertainment devices.

In this era where technology is advancing very fast; further studies are needed to find healthy ways students can use social media and digital devices in classrooms and enhanced their knowledge without causing distractions or having.

Further studies are needed on west and Asia part of the world public middle and high schools; that have applied restrictions and created policies on access and use of social media and digital devices in class.

Further experimental studies are needed on middle and high school that have applied restrictions and created policies on access and use of social media and digital devices in class and those who have not, to see if there a difference in the two sample.

Conclusion

In conclusion, social media and digital devices do take a middle high school students' time, whether in school or at home. Middle and high school students use them for both education and entertainment purposes. This time spent on social media and digital devices among middle and high school students does not have any significant relationship with the academic performance of the same students in this study but that may not be true for all middle and high school settings. This means this study found that with policies and restrictions on the amount of time spent on use and access of social media and entertainment digital devices in a school create a significant no relationship with students' academic performance.

It was found that middle and high school students increased their usage of social media and entertainment devices during the COVID 19 pandemic as compared to pre COVID 19 pandemic. Further, their usage of social media and entertainment devices increased post COVID 19 pandemics. This is due to the fact that every business including schooling has gone virtual, meaning that schooling and any other transaction must be transacted using the social media and digital devices. Therefore, is important for school educators to find various beneficial ways to use social media and digital devices.

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