

How Technology Affects the Way We Read and Write

Honors Senior Thesis

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Abstract

Studies have been conducted regarding the impact that easily accessible technology, including smart phones, tablets, streaming devices, video games, etc, have on the educational, cognitive, and social development of young children. These studies showed that social media and increased screen time in excessive amounts may have negative impacts on a child's mental health, but that access to this technology, as well as texting, does not hinder a child's ability to read, write, and process information. These studies showed that young children and adolescents exhibit an increased level of literacy, as well as a new form of literacy known as "text speak." They also exhibit a high level of understanding when informal writing is appropriate and when it is not, meaning they showed a positive understanding of grammar and syntax when given exams during these experiments.

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As the world around us continues to change, so do we as a people. In fact, we are constantly changing and adapting at such a fast rate that we hardly even notice. One of the main factors contributing to this change is the development of technology. We live in what has been coined the “Technological Age.” By definition, the Technological Age is a historic period in the 21st century characterized by the rapid shift from traditional industry that the Industrial Revolution brought through industrialization, to an economy based on information technology. More recently, today’s society has been historically determined as the “Information Age.” The Information Age began during the twentieth century and is characterized by a shift in the traditional technology brought about by the Industrial Revolution to a society and an economy primarily reliant on information technology. This includes the majority of digital technology that today’s society relies on, like handheld phones, personal computers, and other increasingly accessible technologies.

The rise of the technological age has shown a great impact on society. Since the creation of devices such as iPods, iPhones, and iPads, humans have become heavily reliant on these forms of technology, altering the way we communicate, the way we think, the way we operate, and, arguably most importantly, the way we learn. The Information Age provided us with immediate access to the wonders of the World Wide Web. At our fingertips, and with the click of a button, we are now able to access seemingly infinite amounts of information on nearly any topic one

could think of: government policy, conspiracy theories, the lifespan of red pandas, how to switch from Day Mode to Night Mode on Twitter. You name it, and thousands of sources with information on it exists somewhere on the Internet.

In some cases, this seems like a wonderful innovation, one that can only bring positive growth to our society. Modern technology has introduced humanity to an expedited existence. We no longer need to wait weeks for mail to arrive when technology based companies such as Amazon can deliver packages to use in just two days. Computers have become increasingly faster over the past decade, and they will continue to do so, as they also become more portable and higher-powered than ever before. Smart technology, such as iPhones and iPads, provide us with the same accessibility at just the tip of our fingers. Yet, while technology has certainly increased our access, it has shown to alter the way we learn and obtain information and some scholars and scientists may argue it is not always for the better.

However, though studies have been concluded to claim that technology has a negative impact on the growth of young children, thousands of other researchers claim that the opposite to be true. So, how is it possible for such highly esteemed researchers to have such disparaging views on technology? It is likely due to the fact that “technology” is such an applicable term that encompasses more than just the digital technologies listed previously. Technology is an umbrella term. By the dictionary definition, technology is “the application of scientific knowledge for practical purposes, especially in industry” or “machinery and equipment developed from the application of scientific knowledge.” By this definition, one can conclude that technology is not a new invention in today’s society. In fact, humans have been using so-called “technology” for thousands of years. Yet, today, the majority of people—especially parents—feel that technology is

having a negative impact on young children's development, including cognitive, educational, and social. This is concerning due to the fact that technology and the progression of it has shown to significantly improve the lives of humans for thousands of years: so why is today's generation different? This has to do with the type of technology children are being exposed to. When thinking of the possible negative impact "technology" can have on young minds, we are thinking of technologies such as social media and video games that are claimed to be tainting the minds of adolescents.

Social media has proven to take a toll on the mental health of young adults. For starters, social media has become a playground for these children. Born into a generation that relies so heavily on conversing through the Internet and obtaining communal approval through social media accounts, these young adults have been victims of a media platform that is all about seeking validation from peers, as well as from total strangers. Social media is an outlet used by celebrities and influencers alike to share images of themselves and their products to promote their business. These photos are almost always photoshopped, or altered in a way to make their physical appearance more "beautiful." The term beautiful is in quotations because the standards of beauty on social media fit a singular mold, and it is a mold that is physically impossible for most adolescents to fit themselves into. For this reason, young adults—young girls in particular—suffer from body dysmorphia. Body dysmorphia "is a body-image disorder characterized by persistent and intrusive preoccupation with an imagined or slight defect in one's appearance" (*ADAA*). Due to unrealistic beauty standards set by so many high profile celebrities on social media, adolescents suffer from social pressure to look a certain way. This leads to

emotional and social complications that have proven to have detrimental effects on the minds of adolescents.

Along with the dangers of a social media presence, children are also the most susceptible to the negative effects of increased screen time while using technology. One of the negative side effects of increased “screen time” is how it can deteriorate a child’s physical health. It is no secret that parents are often telling their children to put down their phone and go outside, but even minimal technology use throughout the day may have long term health effects.

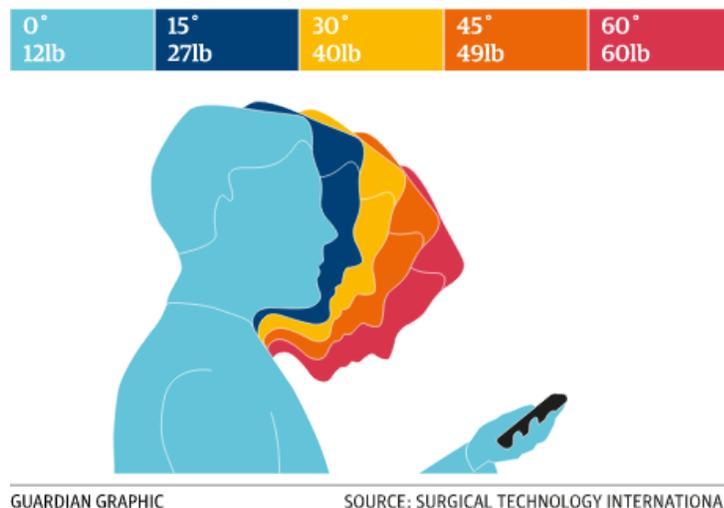
Psychological distress is the most alarming impact of increased levels of screen time (Rosen). A study of Australian adolescents discovered that “excessive screen time predicted increased loneliness, depression, withdrawal, anxiety, attention problems, and aggression” (Rosen, Martin). Furthermore, a study conducted in 2011 found that excessive amounts of screen time resulted in “more sadness, suicidal ideation and suicide planning among American teens” (Rosen, E. Messias, J. Castro, A. Saini, M. Usman, D. Peebles). In summation, a combination of these thoughts and feelings in young adults can be detrimental to their overall development. These issues become concerning when they become ingrained in a child’s personality. A young child who grows up with constant accessibility to technology may develop sadness, anxiety, and attention deficit as irreversible aspects of their psychology. This will lead to greater complications throughout life such as social isolation, emotional withdrawal, and apathy.

Along with dangerous mental side effects, constant attachment to technology, including smartphones and video games, can also affect a child’s physical health. One common health issue among young children and adolescents today is poor posture. Though harmless in its early stages, poor posture can contribute to serious health complications in later life. The term “text

neck” was coined by a chiropractor, Dr. DL Fishman, to describe how constantly texting and using other digital devices affects the structure of a child’s neck. Also called turtle neck posture, the term describes repeated stress and injury caused to the neck and resulting in the neck being positioned at a downward angle. It looks like this:

The burden of staring at a smartphone

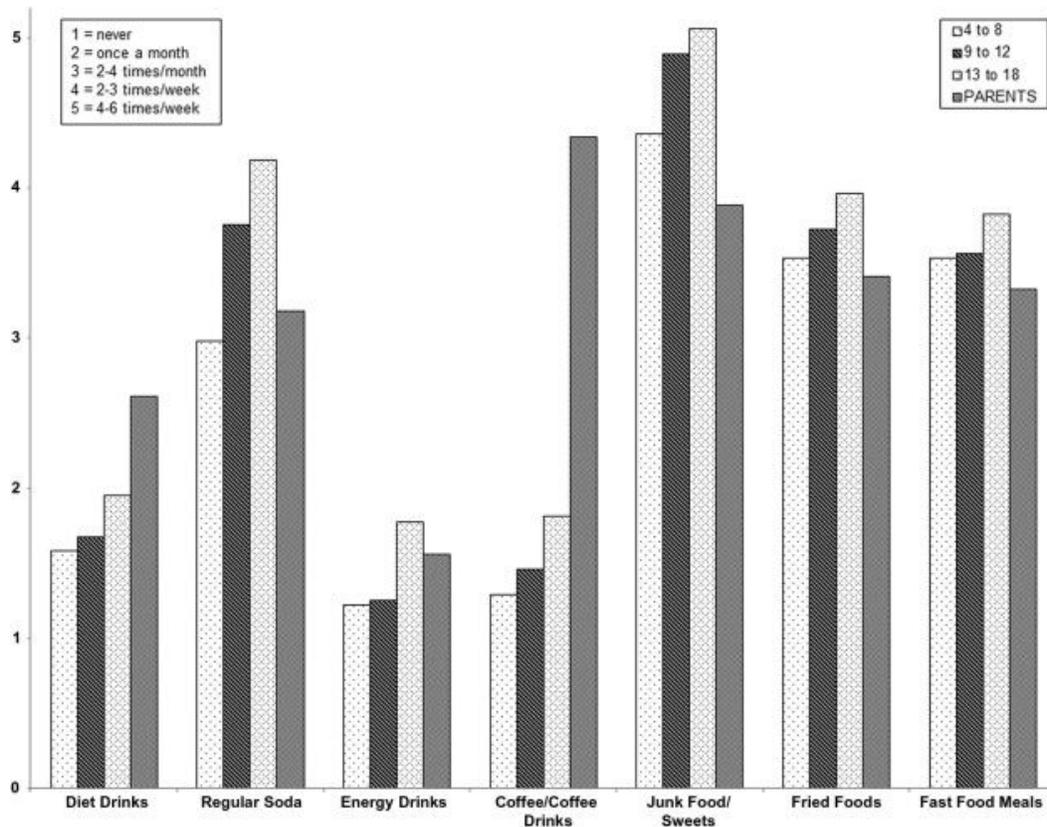
Effective weight on the spine as forward tilt increases



This constant burden on your neck may result in damage to your spine, permanent alteration in one’s posture, and severe cervical spinal injuries that require surgery (Bever).

Excessive screen time is also a concern when considering a child’s physical activeness. The argument stands that screen time promotes obesity through two means: poor eating habits and/or the lack of exercise (Rosen). Numerous studies have been conducted on the matter, and each one concluded that immobility in connection with the use of technology resulted in a higher BMI in young children. A scientist by the name Barnett discovered that “more television, video games, and computer use among American teens predicted increased body fat” (Rosen, Barnett). This is attributed to the habits that these children develop while sitting on a couch watching television. They want fast access to food and drink and so they often end up consuming junk

foods and fast foods to avoid the process of making food. This may also be contributed to the relationship with the parents, as well as the parents' eating habits within the household. The following chart depicts the amount of junk food consumed by the average child within specific age ranges, as well as the amount consumed by the parents.



Despite these dangers of increased use of technology in the lives of young children, this does not ultimately determine that technology, on a broad scale, is dangerous. Rather, what we must be aware of is how young children are using technology and for how long they are using it. Social media is not a threat to our society. In fact, social media has actually significantly improved aspects of human lives such as communication, networking, and influencing. It provides people of all ages and all groups with a platform to share their life, however much they would like to. One major social media platform that has helped people connect from across the

world is Facebook, a website founded and created by Mark Zuckerberg. Facebook has allowed for families and friends to connect and stay connected by sharing updates, photos, and momentous occasions with one another. Other social media platforms, such as Instagram and LinkedIn, also provide an easy way to stay connected and network with those who may have similar interests, relating to educational studies, hobbies, or career paths. However, like most good things, too much of social media usage can have a negative impact on a child's development. Studies have been conducted to determine whether or not increased time on social media impacts a child's educational development such as literacy skills. Furthermore, parents fear that their children will spend less time with their books and more time with their technology. Rather than assuming the worst of this type of behavior, it is important to understand how technology functions in the lives of young children in all aspects, as well as understanding how we can utilize its benefits to bring a positive impact on children's growth and how to lessen the possible negative outcomes.

The Effect of Technology on How Literature is Created and Presented

As we are aware, literature follows culture. The literature we are familiar with today, particularly short form writing and the contemporary genre, adopted technical changes to keep pace with the pressing needs of the time. Since the invention of various techniques in writing including paper, ink, the printing press, binding, and the circulation of literary sources, literature has significantly changed. This change is not merely the technical alterations, but also the "very production and reception of literature" (Gugane 2). The word "technology" comes from the Greek word 'techne', meaning 'craft' or 'making'. With literature being a creation, or making

something new, it has a strong relationship with technology. When used as a literary tool, technology demonstrates some sort of transformation in humanity, emphasizing that as long as technology continues to evolve so will humans and so will literature. It is much like a domino effect.

Thinking in terms of the accessibility of literature, technology has contributed a positive impact. Years ago, being a writer was an arduous task; one that was burdened by tons of paper, ink blotches, aggressive cross-outs, and slow working editors and publishers. However, nowadays, writers can churn up new novels in a fraction of the time it once took. The use of technology to write, edit, and print literature has expedited the process exponentially.

Technology has also become an integral part of the success of many works of literature. Through the use of social platforms such as Instagram and Twitter, authors are able to promote their work with no charge at all. Furthermore, readers are able to communicate publicly about their own reading habits, releasing their reviews of literary works to the public. This stimulates conversations regarding contemporary literature, either significantly improving or damaging the reputation of a novel. In literary criticism, it is commonly accepted that, when critiquing a work of literature, the author is deemed “dead.” However, critics wrote in *Forbes* that in today’s world the author isn’t dead, and that they’re “searching their name on Twitter to see what people are saying about them.” (Quora) Throughout literary history, it has remained true that writers have no influence on how their readers react to their work, and yet, the Internet has allowed for a reader-writer relationship to take place and created a two-way conversation about literature, when it had previously been more “one-way” (Quora).

Changes in Literature: The Canon vs. Contemporary Literature

Today, the Western literary canon continues to be an integral part of the English curriculum. The literary canon is defined as “a body of books, narratives and other texts considered to be the most important and influential in the West.” Authors of these highly esteemed texts include Shakespeare, Homer, and Chaucer. These authors and their works fall into the category of the canon because they are measured in skill in value. Often times, canonical literature earns its spot in the canon because it is unprecedented, meaning the story, the idea, or the characters are unfamiliar to readers completely. They have never existed in any form prior to that first “canonical” creation, and so they ultimately serve as the pioneer for some movement in literature. In this way, they have become some of the most influential works of literature of all time, a claim that scholars continue to support.

The Bible is arguably the most prominent work of literature in the literary canon. It has often been studied as the basis of all great literature. When studied as a literary work, and separated from its religious context, the Bible serves as the highest form of literary success as it continues to influence literature today. You could name any popular novel and there is a high chance that it contains a biblical allusion. Examples include Shakespeare’s *Hamlet*, John Steinbeck’s *Grapes of Wrath*, and even C.S. Lewis’ *The Lion, The Witch, and The Wardrobe*. Each of these works are also arguably part of the Western literary canon, despite the fact that they were heavily influenced by another canonical work.

In a sense, canonical literature no longer serves the same purpose to our society as it once did. Whereas these works were once read for enjoyment, they are now read for educational purposes. Unless you are a scholar, adamant about Shakespeare or Chaucer’s work, sitting down

with a cup of tea to read one of their literary creations is a rarity. Nine out of ten times, these works are read in the pursuit of knowledge. English classrooms today continue to use these works to serve as a foundational way to further students' understanding of literary history, not for their enjoyment. If you were to walk into a classroom where *Macbeth* was currently being taught and ask students how they felt about the work, the reaction would likely be negative; not because the student necessarily hates reading (although that is always an inevitable possibility), but because the student does not understand the reading. Reading comprehension becomes lost in the unfamiliar language, sentence structure, and thematic elements of these works for high school students. This is not because Shakespeare wrote about incredibly complex subjects, incomprehensible to adolescent readers, but because he wrote about *unfamiliar* subjects. When students are given a work that explores a topic that they are unfamiliar with, chances are they will not fully immerse themselves in the reading. Yet, we continue to feed them Shakespearean plays and poems, Homer's *The Odyssey*, and other works from the canon.

Scholars often compare the literary canon to a genre of literature today called contemporary literature, or young adult literature. This genre is defined as literary works set after World War II. Furthermore, these works tend to include thematic elements regarding our world and society, drawing on themes of growing up and confronting personal issues including race, gender, and sexuality. Young adult literature reveals a lot about today's society, as well as the individual. The stories are relevant to the obstacles faced in today's world, such as racism, prejudice, and political unrest. Whereas the literary canon is primarily dominated by white Christian men, the genre of contemporary literature includes voices from every race, every

religion, and all genders. This, alone, is evidence of how we have progressed as a society, and how literature has progressed with us.

With that in mind, one may ask whether technology has truly changed literature, or if literature has simply changed as a result of external influence. We are not necessarily less literate than we were as a population when Shakespeare was a common household read; rather, our literacy has changed. Simply put, we cannot continue to judge a child's literacy by how much they understand canonical literature. We can teach them classic novels to help them build an understanding of how literature once was and how it has progressed, but we must use contemporary literature that fits their needs, their likes, their dislikes, and their use of language.

A New Type of Literacy

The way in which the contemporary genre is often written reflects a shift in literacy that has occurred in the last decade or so. This new literacy is called "text speak" or "netspeak." It is defined as "language regarded as characteristic of text messages, consisting of abbreviations, acronyms, initials, emoticons, etc." (Drouin). Text speak is the expedited way in which teenagers, and young adults, converse through text messages and other forms of social media interaction. The common use of abbreviations such as "omw" (on my way), "brb" (be right

back), and “ttyl” (talk to you later). It looks something like this:



When looking quickly at how these abbreviations are used in most teenager’s messages, it is often concluded that this shortened way of writing is hindering their ability to communicate coherently and correctly. Surprisingly to most, the opposite is true. Dr. Michelle Drouin, a developmental psychologist, professor, and internationally-recognized speaker, led a study on so-called "text speak" and literacy. The study showed no significant differences in literacy scores or spelling ability between texters and non-texters. The texters also showed that they recognized the difference between occasions when text speak is appropriate and when it's not. Essentially,

just because students abbreviate and use “poor grammar” when texting does not mean they are unable to write coherently and formally when necessary. Rather, these students have shown a heightened ability to differentiate how they write and how they speak in regards to the environment they are in and to whom they are speaking. This is actually an incredibly important life skill to have, and for such young students to be able to understand this shows an increased level of literacy, as well as different types of literacy (Drouin).

In 2016, researchers from the University of Amsterdam collected text messages from fifty five adolescents and studied them for what they called "textisms" and other grammatical errors. These researchers used an example from a young girl's journal to illustrate a common “textism” omission that occurs in text messages. The excerpt reads: "Start to wonder whether am really good friend." To be grammatically correct, the text would have to read, "I start to wonder whether I am really a good friend." In her informal writing, the young writer has omitted the "I," a relatively common pattern in texting. Researchers worked to analyze why this was such a commonality among texters. It turned out that those omissions were surprisingly important. When the researchers from Amsterdam analyzed their findings, they discovered that the more words children removed from their text messages, the higher they scored on grammar tests. Researchers' presumed reasoning behind this is that due to the fact that you cannot simply drop random words from a text message and expect it to make sense, a texter needs to utilize their knowledge and understanding of grammar to decide that it's okay to omit, the first-person subject, as in the example above (Van Dijk).

The Impact of Technology (Autocorrect, Grammarly, etc.) on Grammar

When students rely heavily on technology to coach them through their reading and writing, they have no problem with obtaining information. However, they do lack the looming presence that the ominous red pen once had over us adults during our years in secondary school. Classrooms have begun to push for the use of technology such as Chromebooks in the classroom. Therefore, every single student becomes a victim of “digitally corrected grammar”, meaning their laptop becomes their very own proofreader. Those red or blue squiggly lines that appear underneath the text represent mistakes in spelling and grammar, and allow students to fix it with the click of a button. However, nine out of ten times, the students will not pay attention to what they even fixed. They’ll simply right click, select the suggested edit, and apply it to their text.

Where does the learning occur here? It occurs in the students’ understanding of how to use technology to edit their writing; it does not occur in their understanding of proper spelling and grammar. In fact, tools such as auto-correct, spell check, and even the Google extension Grammarly, override the students’ need for learning proper reading and writing skills. Instead, they become a crutch that adolescents rely on, one that, when taken away, leaves them struggling to write a proper essay on a blank piece of paper.

Some educators have been told to embrace this shift in a child’s learning and let technology play its role in a child’s development. Cynthia Ryan, Ph.D., associate professor of English, says, “new technologies will, as they always have, influence how we gain and use knowledge,” (Ryan, *UAB News*). Furthermore, she muses that those “who learned to use language through a different approach, or who value some aspects of English that are currently being dismissed as less important” (Ryan, *UAB News*) such as educators, may find this shift

alarming. However, she soothes those worries by stating that literacy is simply something that continues to change over time. (*UAB News*)

Furthering the previous mention of text speak being a new form of literacy, some researchers have begun to consider texting as a new genre of writing as well. According to Tonya Perry, Ph.D., assistant professor of curriculum and instruction at the UAB School of Education, the idea behind this new writing genre is that texting language and grammar produces an expedited and informal writing style. In high school, English educators teach their students to fit their writing style to their intended audience, a skill focused on during units of persuasive writing. For example, when students are writing essays or research papers, they are told to write from a third person perspective, using formal and concise language. This is so that the audience of that piece of writing—usually an academic professional—can relate to, understand, and evaluate the piece. On the other hand, when students are texting, they understand their audience is informal. Along with that, texting as a genre of writing has certain parameters, such as length restrictions, that require students to be incredibly concise with their language. This results in the use of abbreviations, or what we've come to know as text speak (*UAB News*).

Nenagh Kemp, senior lecturer and co-author of a recent study on how texting impacts young adults, believes that her research indicates that texting functions as a positive predictor of language skills. This also factors in whether or not the students can keep their two forms of literacy distinguishable. Ultimately, "as long as young writers can maintain this awareness," explained Kemp, "then the violations of grammar common in digital communication need not be perceived as a reduction in writing skill, but rather as the addition of an alternative, casual style to the writer's repertoire" (Kemp). This quotation hints at the idea regarding the adaptation of

literacy to a changing world. Humans are not necessarily becoming illiterate, but rather we are on track to create a new genre of reading and writing.

For their most recent study, Kemp and her colleagues recruited 243 participants from elementary school, high school, and college level. They asked each subject to offer every one of the text messages he or she had sent over the last two days. The researchers then analyzed the messages for spelling or “grammatical violations” (Kemp). (Here, they specifically avoid the word “mistakes” because not all deviations from proper English are accidental.) The three most common violations were as follows: omissions of capitalizations and punctuations, omission of entire words, and unconventional punctuation. Each participant also took a formal spelling and grammar test. A year later, the team brought the subjects back for a follow-up set of tests. The results were mixed, although Kemp seems to avoid the undesirable results. When analyzing the follow-up experiment, Kemp says, “elementary and high school students did show a positive effect on spelling and grammar tests” (Kemp).

However, the studies that have been conducted earlier than 2015 were dealing with a very different group of students than they would be if the experiment were to be conducted today. Technology has been continuously growing and becoming an integral part of our society for approximately two decades now, but it wasn’t until the more recent years that this has infiltrated the development of young children, even as young as two years old. As someone who has worked with children consistently for the past six to seven years, the shift in their need for easily accessible technology is tremendous. In a sense, an iPhone or an iPad has become much like a third arm for children.

This is likely the stir of so much alarm around young children using technology, since we see them beginning to understand how to use iPhones and iPads at such young ages. An article from Erikson Institute of Technology discusses this issue thoroughly. The essay begins with stating that “children today are born into a world where technology is deeply integrated into the fabric of daily life. Parents use and depend on technology at work, socially, and in the home” (1). Children, especially when they are very young, model their behavior after their peers. These peers are more often than not their parents. Studies have shown that behavioral traits in children during their early years mimic those of their parents, or parental figures. This is because, much like most intelligent species, humans learn through imitation. With this being said, it is no wonder why young children feel so drawn to technology; their parents are carrying around a cell phone or typing on a laptop every single day.

According to the article, “Technology and Young Children in the Digital Age” a recent survey conducted by Erikson Institute of Technology, “technology use by young children under age six was found to be almost universal” (1). This study surveyed one thousand parents across the United States to determine whether or not they allowed their children to use technology, and if so, how much and how often they were permitted to do so. The study showed that 85 percent of parents do in fact allow their young children to use technology, with “television, tablets, smartphones, and computers” (1) being the most common. Along with this study, more than three quarters of surveyed parents claimed they use technology alongside their child for a maximum of two hours on a daily basis. After participating in this study, the majority of the parents claimed that they felt this integration of technology into the lives of their children has shown significant improvements in cognitive development. More than half of this focus group

believe that exposure to technology prepares their children for school, and ultimately impacts their success rates within their education (*Erikson Institute of Technology*).

My Research and Analysis

In order to ensure that the information I was gathering was recent and relevant to my intrigue in this topic, I decided to conduct my own mini experiment, using parents that I know with young children. After creating a short survey, I asked them how they overall felt about their children's reactions to technology. My results are as follows:

How many children?	1, 2, 3, 5
Of what ages?	5 yrs, 2 mos, 7 and 10, 9, 4, 3, 2, and 8 mos
Do you let your children use technology?	100% said yes
What type of technology do they use most often?	$\frac{2}{3}$ use tablet most often, $\frac{1}{3}$ use television most often
How many days a week do they use technology?	$\frac{2}{3}$ use it 7 days a week, $\frac{1}{3}$ use it 5 days a week
On average, how many hours do they use technology daily?	1-2 hours
For what purpose do they use technology?	$\frac{2}{3}$ use it mainly for entertainment, $\frac{1}{3}$ use it mainly for education
Do your kids use technology in school?	"Yes, smart boards, computer labs, movies" "Yes they have iPads and Chromebooks that they use sometimes" "Yes, all classes have iPads, computers, smart boards"
Do you feel that technology has positively or negatively impacted your child/children?	"I think technology has helped my children to learn new things." "Positively. Games include learning and practicing of certain skills"

Do any of your children own a cellphone?	100% said no

By conducting my own research, I was able to collect data from text subjects that I know personally, as well as ensure that the data being collected is recent and up to date. That was one flaw I came across in my initial research: a lot of the studies were conducted three to five years ago. In that span of time, technology has evolved tremendously, and social media has continued to grow into an integral part of our lives, especially the lives of children and adolescents. This may result in disparities between results.

Along with that, I wanted to collect information regarding the effect of technology on the young children in my own life. As I prepare to enter the field of education, I am aware of the role that technology has played in the lives of my future students. They grew up with access to smartphones and smart technology, whereas I did not. This leaves a gap in my understanding of how these students process information. In order to ensure that I am able to educate these students to my greatest capacity, I must be able to understand how they have grown in the technological age, and use that as a way to create lessons and projects in my classroom that will benefit this group of students. It is an essential skill as an educator to be able to appeal to your students likes and skills when teaching them new material. The teacher is never the smartest person in the classroom. Rather, they must be willing to step out of their comfort zone and learn from their students, and in return, allow their students to learn from them.

In Conclusion

Technology is not something that we, as a society, should be afraid of. We cannot run from it; technology is everywhere. It has become so ingrained in our lives that to attempt to shield children from using it would be futile. Rather, we must understand how it can function to benefit us all. Using technology in an efficient and purposeful way, both inside and outside the classroom, has proven to show tremendous positive impacts on the educational development of young students of today and tomorrow. By utilizing this wonderful tool that our generation has access to, we can be sure that it will foster a positive change to how we learn, and allow for future generations to access and process information that past generations lacked the ability to do. The key is simply to make ourselves aware of every facet of technology—the positives and the negatives—and understand how to navigate this fine line for ourselves and for our children.

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