Relationships with Technology: How it is in the Home and in the Classroom

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

In our modern world, technology has become embedded in all aspects of our lives, from the home to the classroom, with this especially affecting children. Years ago, during my time in grade school, almost all the assignments I did were done on paper, and now in college it is the opposite. As a kid, I had access to several technological devices at home, such as a laptop and gaming consoles. Whenever it came time to use technology at school, it was almost second nature to me. However, this was not always the same for my classmates. Our school was in a very rural area, therefore many of my classmates' interactions with technology would happen only in the classroom. Not many of them would have had laptops or computers at home. This would often cause them to need help from the teacher. Nowadays, this situation is becoming less common and more complex as education and technology are intertwined.

It is now impossible to avoid technology in the classroom. This is why I want to explore the effects of these technology connections. In our time, it seems that access to technology is not the main factor, instead how a parent lets their child use technology is what matters. Children's technological limits are now based on how much time and freedom their parents allow them to have when it comes to technology. Based on my own observations and experiences, my research question is how does a student's relationship with technology at home impact their relationship with technology in the classroom?

To my understanding, it seems that having access to technology at home benefits children, while overuse of this technology can be harmful. This question is an important one to ask since technology will never leave the classroom. By gaining an understanding of these relationships, we can potentially learn how to best use technology for the betterment of children and students. By synthesizing research on technology and education, and analyzing online

discussion from parents and teachers, I will delve deeper into the connection between these relationships.

Context

The impact that technology has on students and children that use it is discussed and argued about often. This is a nuanced issue, as technology has mixed and varied impacts on children. One of the outcomes of the increased use of technology in education is that there are now students who can not get access to educational material due to their lack of access to the internet or technological devices. If a student comes from an economically disadvantaged household, they might not be able to get their hands on the same technology as their fellow students. However, even if a student can get access to the technology, the effects do not stop there. For some students, technology can often come as a distraction that draws their focus away from learning. Yet at the same time, increases in the use of technology leads to students having more access to information then they could have had in the past (Ascione, 2023; Maryville University, 2022; Myers, 2023).

Schools are aware of the fact that there can be problems with students having access to technology and are working to fix some of these issues. I have seen first hand that schools are willing to offer Chromebooks to each of their students in order to ensure that every student has access to the technology to do schoolwork, as this is what my local high school does. This is something that is supported by parents as a poll by Pew Research Center found that 49% of parents believe that K-12 schools should provide laptops to all students, and 37% believe that it should be only for students whose families cannot afford them (McClain et al., 2021). Efforts like these are not done in all schools however, as in another poll done by Pew Research Center (2024), only 88% of teens responded that they had access to a desktop or laptop computer at

home. This shows that there are still students out there that do not have the same access to technology as their peers, which is why research into how this can impact these students is valuable.

Methodology

Actor-network theory (ANT) can serve as the framework for understanding how the different aspects of the relationships between students and technology can impact each other. Sociologist John Law (2008, p. 141) describes Actor-network theory as "tools, sensibilities and methods of analysis that treat everything in the social and natural worlds as a continuously generated effect of the webs of relations within which they are located". In this way, ANT can be used to view each factor that affects these relationships as being actors in the overall network. The students, teachers, parents, devices, and even the applications they use are all "actors" that are connected in this network. Each of these actors has effects on all the other actors and the connections between them is what shapes the network. In using ANT as my framework of choice, my goal is to draw these connections between each of the actors in this network in a way that shows that all of these aspects and factors are interconnected and have effects on each other. In this network, there is nothing in isolation, and nothing is working on its own in a void. By viewing my analysis through this lens, it will be clearer in how these relationships impact each other.

To find research into my question, I used Google Scholar for finding articles and journals. I also used Web of Science in order to browse across databases to access various academic journals. I also browsed the Roper iPoll database in order to find previous collected survey data. In my research on these platforms, I began by focusing my research on technology in the classroom, using those as my keywords. From there I branched out into researching the access

students have to these technologies in both the classroom and in the home. In order to further my research, I choose to put a large portion of the research time into exploring digital inequality and digital literacy, which I define below. The reason I put much of my research effort into these topics is because I view them as the most important aspects in defining the relationship between technology in the home and in the classroom.

When I discuss digital inequality in this instance, I define this term as the access to technology that can be used when it comes to schoolwork, as in devices such as laptops, phones, desktops, and tablets. I am not referring to other technology that can be found in the home like smart devices or gaming consoles. When I use the term digital literacy, I am referring to the skills that are needed to effectively use technology in both the classroom and in the home, such as knowing how to find information, knowing the uses of devices, and how to use these devices to collaborate and communicate, as defined by Tinmaz et al (2022).

Another avenue in which I did research was into how parents and teachers online discuss and view technology at home and in the classroom. To do this, I visited the social media application and website Reddit, which works as a forum-based social media platform. On Reddit, users can create forums called subreddits, which is where people go to posts and comment on certain topics. I chose to browse the subreddits for parents and the subreddit for teachers. To find discussions related to my questions, I only browsed posts that were about or related to technology. In order to preserve the anonymity of the users, I will not include the names of any users or the links to the posts in which I discuss.

Digital Inequality and Digital Literacy

When it comes to examining the relationship between how a student's relationship with technology at home impacts their relationship with technology in the classroom, an important place to start looking is at digital inequality and digital literacy. A study done by Thottoli and Thomas (2024) found that technical skills and technical knowledge heavily affect how well students are able to work in digital learning environments, and is a significant component in ensuring these environments are successful. Socioeconomic status is a major factor contributing to digital inequality and digital literacy. It shapes whether students develop technology skills and whether they have access to the internet at home. According to van de Werfhorst et al. (2022), these technology skills are what drive the digital divide between students. Schools can help diminish digital inequality, however as found by González-Betancor et al. (2021), digital access at home is heavily dependent on the socioeconomic status of the family. They also found that the way students are made to use technology in class has an effect on how they use technology at home. This runs counter to a previous assumption that I had that kids are often introduced to technology at home and that the relationship with technology at home is what affects the relationship with technology in class, but for some kids this relationship could run in the opposite direction. This is why schools should focus on helping students cultivate their technology skills at school because some do not get the chance to do so at home. This is supported by data from an article by Imran (2022) who states that 40% of the global population does not have internet access in their homes. Without internet access, a large portion of technology becomes very limited, because most features of modern technology are locked behind an online connection, and this can make it difficult for students to learn digital skills. Similarly, in a poll by Pew Research Center (2024), 12% of the teenagers surveyed responded that they do not have access

to a laptop or desktop at home. This shows that technology access is still something that needs to be constantly worked on in order to close these gaps that exist in digital inequality and digital literacy. Schools should help students in getting access to technology and work on helping those students understand how to use the technology.

Digital inequality is not just affected by socioeconomic status but can also be affected by other factors such as gender. In a study done by Kuhn et al. (2021), they found that female students' relationship with technology in the classroom had many differences with those that male students had. Female students would often be less confident in their technical skills and would struggle more with reading on digital devices over books. The female students would often report more physical issues, like eye irritation and headaches, while doing reading on devices and they had more problems with concentration. When we ask why this is so, we should focus on the home environment. I think that too often technology is seen as being traditionally a boy's thing. Because of this, girls are at risk of having underdeveloped digital literacy compared to their male peers. Gender should not be something that comes into conflict with digital literacy and digital equality. No matter the gender of a student, it is important to allow them technological access and to encourage them to develop the needed skills to use these technologies, both in the classroom and in the home.

Academic Performance

To further understand the relationship between technology in the home and in the classroom, it is important to understand the effect technology use has on a student's performance in the classroom. Looking back at digital literacy, it seems that this is one of the main factors that plays into a student's performance with technology. Jeong et al. (2024) used a mathematical function to model student achievement and found that students who view themselves as

competent in digital use outperform their peers. However, they also found that students who use technology to submit assignments at home tend to have worse performance. The difference is found in the contrast of knowing how to use technology, versus the actual use of technology, which can often involve chances for distraction that can affect performance. Oftentimes when someone uses technology, they will delegate the full responsibility of the actual work to the technology, artificial intelligence being an example of this. In doing this, students can deprive themselves of the development of technological skills. Skvarc et al. (2021) came to a similar conclusion as Jeong et al. (2024) when examining the connection between technology in the home and academic performance. They found that the number of computers at the home was positively correlated with performance in mathematics, but the number of hours spent on the computers did not correlate. This ties back into socioeconomic status, because the ability to have a desktop computer at home could be a proxy for a family being middle class. These results show that knowing how to use technology in the classroom is beneficial, but using digital devices to do work at home can be detrimental. Furthermore, in a study by Gorjón and Osés (2022), it was found that excessive use of technology everyday led to significantly lower math scores. Data like this suggests that the relationship between technology in the home and in the classroom is not always positive and there can be negative aspects especially when it comes to student performance.

The solution to this problem with performance presented by technology overuse points to there being a sweet spot or middle ground, and it would be a benefit to students for us to find how to reach this balance. Ben-Jacob and Glazerman (2021) claim that our use of technology is fundamentally based on the trust we have with it and with other users. They compare this to how teachers are responsible for creating a safe and secure learning environment. Breaking this trust

with technology is like harming this learning environment. Teachers should ensure that technology is used properly in moderation in class. Once again, if we let students delegate too much of their work to technology, we are letting themselves negatively affect their own technological skills. Students should be taught about technology as being a tool and not a solution. It is also important to consider that when we are talking about the relationship between technology in the classroom and in the home, that parents should also be aware of how their children use technology and ensure that overuse is avoided so that this trust we have is not broken.

Parent/Teacher Opinions

Students are not the only ones who affect this relationship between technology in the classroom and in the home, parents and teachers are also important in this equation. A study done by Appova et al. (2022) suggests that the views and beliefs that teachers hold about technology in their classrooms affect how well that technology integrates into the classroom. Similarly, Xin et al. (2024) found that parent's views and beliefs can affect the relationship that their kids have with technology at home and in the classroom. The opinions of adults on technology can heavily affect the way that technology is presented to kids and affects the relationship they have with technology. This becomes complicated since parents and teachers all have mixed opinions on how they feel about children's and student's relationships with technology. Rizk and Davies (2021) found that teachers viewed technology as a "neutralizer" that allowed students to have more similar classroom experiences. The researchers agreed with these teachers, as they state that digital technology can narrow the gap between students in a way that can not be done without technology. This is why digital inequality and digital literacy are important issues to focus on, as technology cannot close these gaps if it is not shared equally, and

if students do not know how to use it. The teachers had a positive view on school giving students technology as it helped bridge the gap between any inequalities. However, when it comes to technology involvement in parenting, the response is more negative. In Pew Research Center's American Trends Panel Wave 63 (2020), 66% of parents said that parenting is harder today than twenty years ago, with 26% saying the reason is technology and 21% saying it is social media, which is technology adjacent.

When I visited the subreddits for teaching and for parenting, I found that the overall attitude leaned negative towards technology in both communities. In one instance, a user posted that their school has been ruined by technology ever since the Covid pandemic. In response many commenters posted about how much better they found low-technology teaching to be and how it is better to just switch back to paper. In a different post, another user writes that they are "quiet quitting" the technology they have in their classroom. The commenters were generally in support of this and recommended a return to paper. The general consensus I found from these posts is that teachers on Reddit have many problems with technology and most want to return to how teaching was done before technology was integrated. This negative opinion on technology was also present on the subreddit for parenting, however there was more positive support for technology. In one post, a user asks fellow parents at what age children should get cellphones. Many responses still encouraged getting phones, however most recommend lower end phones like flip phones until they are much older. This is similar to how the teaching subreddit was inclined towards lower technology teaching. In another post, a user asks other parents about how they are navigating technology. The responses to these posts were mixed with some parents supporting technology in moderation and others wanting to avoid it as much as possible. Overall the posts were more positive than those on the teaching subreddit, however there was still a great

deal of negativity towards technology as a whole. Parents and teachers are all free to have negative views on technology, however as stated earlier, research suggests that this can be a detriment to students. There are negative aspects that come with using technology in the home and in the classroom, however, work can be done to find the balance. Parents and teachers of students should encourage use of technology and help them foster digital skills, while also ensuring that a student knows the negative consequences of technology overuse.

Conclusion

How a student interacts with technology at home and the access they have affects those same things in the classroom, and vice versa. Digital inequality and digital literacy are both issues that need to be addressed in the classroom and at home. The relationship between technology in the classroom and in the home are inseparable. How technology is used in both these environments affects how it is used in the other one. For the best outcomes, a student needs access to technology both at home and in the classroom. Also, the parents and teachers of a student should encourage their use of technology and help them foster digital skills, while also ensuring that a student understands the negative consequences that come with technology overuse. Finally, it is important to understand our beliefs about technology, as this can affect how we interact with and use the technology around us.

The relationship a child has with technology in the classroom and with technology in the home are very connected and these relationships both positively and negatively affect each other. Parents should help teach their children that there should be limits to how much they should use technology everyday, and parents should take advantage of parental controls to set limits for especially young children who can not yet be taught. Teachers should encourage students to use technology not as a shortcut, but instead as a tool that can assist them in learning. Schools should

have classes that teach children how to properly use technology and teach them the skills that are needed to develop digital literacy. Parents can also help by showing their children how to use technology when it comes to helping with homework. Children should also be taught in both the home and school that technology should not be used as a replacement for social interaction and learning. It is important to ensure that kids understand that technology should never be a crutch that they have to rely on. A child's relationship with technology is equally modeled by their home and classroom environment, so we have to foster healthy use of technology in both environments.

I think that it is important to address how the rise of artificial intelligence in education impacts digital literacy. I believe that the way that many students use artificial intelligence can potentially harm their digital literacy skills. Oftentimes artificial intelligence is used as a shortcut to do things such as summarize, research, or study. In using artificial intelligence in this way, students are depriving themselves of opportunities to develop certain skills that are needed to be digitally literate. It is important to know how to use technology to do your own research and be able to properly summarize findings, but by offloading this work to artificial intelligence, these skills are not being actively refined. Artificial intelligence can often be a helpful tool, but overuse and over reliance on it only works to harm digital literacy in students.

It is also important for there to be further research into the connection between technology in the classroom and in the home, as there are aspects of this relationship that we still do not understand. This is especially true today, as the previously mentioned rise of artificial intelligence technology adds another dimension to this discussion. Everyday technology is growing and evolving, and that is why we must focus on the relationship that children and students have with it.

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