

Inquire, connect and disconnect: Technology implementation to (re-)engage post-pandemic students

Sunaina Sharma, Department of Education, Brock University, Hamilton, Canada. ssharma4@brocku.ca

Abstract

A recurring issue classroom teachers face is engaging their students and digital technology is often viewed as a tool to enhance student engagement. Prior research on digital technology and student engagement consists of the views of educators. Research that does represent student voice is composed of the voices of elementary and post-secondary students thus, negating the voice of secondary students. This research sought to answer the following research question: how does the use of digital technology in the secondary classroom engage students? This research amplifies the voice of secondary students by weaving research data from a mixed-methods classroom ethnography. The data includes questionnaires, conversations, field notes and reflective journals. To extend on the research, data obtained before the pandemic woven with reflections and observations gained from the researcher's experiences as a post-pandemic classroom teacher in a secondary school leads to an enhanced understanding of how digital technology can be used to support student engagement in today's post-pandemic classroom. The results reveal that there has been a commonplace assumption that digital technology inherently engages students; however, this research debunks this assumption. Technology contributes to engagement when it allows students to construct their own knowledge or co-construct knowledge with their peers. Further, this research affirms that students' technology does distract them from their learning; however, the research reveals that students want their classroom teacher to interject when they are distracted by providing them with strategies they can use to resist the lure of technology.

Keywords: constructivism, classroom technology, digital technology, student engagement, ethnography, secondary students

Summary of key points:

- Digital technology does not inherently engage students but the intentional planning and implementation of technology used by the classroom teacher can foster student engagement.
- Technology contributes to engagement when it allows students the opportunity to construct their own ideas.
- Technology should not be used for knowledge consumption but rather for knowledge creation. Students acknowledge that technology distracts them from their learning therefore, students want to learn how to resist the lure of technology.

In an effort to keep up with today's generation of learners, educators bring technology into their classrooms and schools as a means to communicate, to share information, and even to attract student attention. Digital technology has changed the way we work in ways that would have been unimaginable a decade ago (Barley, 2020). Digital technology has the potential to enable, extend and enhance student learning (Henderson, et al., 2017). This has positioned digital technology as being an essential part of students' learning experience.

There is a commonplace assumption that today's twenty-first century learners are engaged by the use of technology. However, when the COVID pandemic forced students to engage in online learning, it became obvious to educators that students were disengaging.

Educators use technology to increase opportunities for collaboration (Svela, et al., 2019), to connect students with experts and contexts beyond the physical classroom (Hood, 2018) to encourage participation and task completion (Roy & Clark, 2019), and to promote thinking and understanding (Cevikbas & Kaiser, 2020).

However, perhaps the consequences of classroom technology have been under-examined. There is some research suggesting that technology results in increased cognitive load on students (Schmitt, et al., 2021). In addition, technology may erode the ability to pay attention leading students to pay partial attention (Dewan, 2019).

The research literature is inconclusive about technology's consequences and relationship to student engagement but confounding the issue of student engagement and technology is that with the return school after the emergency remote learning that the COVID-19 pandemic initiated, there is a need to reset and re engage students in the classroom (Ladson-Billings, 2021). Discounting the importance of student engagement at this crucial time would mean discounting the student.

Understanding Student Engagement

Often, student engagement is seen as synonymous with student motivation yet, that is not the case. While student motivation consists of internal thoughts and beliefs, student engagement includes concrete, observable and measurable indicators. A comprehensive definition of student engagement includes a combination of behavioural, cognitive, and affective attributes.

Skinner and Belmont (1993) associated student engagement with "sustained behavioral involvement in learning activities" (p, 572). It includes "the degree of participation in school activities (Appleton et al., 2008, p. 37). Cognitively, student engagement means an investment in the learning process (Chi et al., 2018) and a sense of interest in learning by going beyond a task's requirements (Pentarakı & Burkholder, 2017). It leads to students viewing the task as educationally purposeful. Affectively, student engagement means that engaged learners feel enthusiastic and excited about learning and experience surprise when they learn something new (Altuwairqi et al., 2021). The interconnected dimensions of student engagement reveal that student engagement is essential to student learning. Despite the varying definitions of student engagement, there is a consensus that engagement is a multi-faceted

concept that unifies varying forms of engagement (Fredricks et al., 2016). This research sought to validate the multi-faceted dimensions of engagement and defined student engagement is as:

“involvement in class discussions, participating in learning activities, asking questions, responding to other comments, marking in their texts, debating, bringing questions and problems to the class that were discovered by reading out of class, writing response papers, emailing or posting discussion thread questions and comments with other texts and writers, and probing deeply into a text or a research problem” (Garrett, 2011, p. 6).

The Impact of Digital Technology

Digital technology within the context of education are tools used to support and enhance learning. In the broad sense, digital technology refers to “electronic tools, systems, devices and resources that generate, store or process data (Fiderikumo, 2022, p. 77). This inquiry defined digital technology as tools connected to the internet that were used in the classroom by the teacher and/or by the students including, but not limited to, personal cell phones, laptop computers, classroom projectors connected to the teacher’s laptop, and Google Chromebooks.

When students have technology at their fingertips, it can enrich the classroom environment. They can watch videos related to classroom learning in order to enhance their understanding (Zou & Xie, 2019). They can communicate with their peers (Tai & Chen, 2020) and their teachers (Fatimah & Santiana, 2017). Further, they can use web-based instruments to complete tasks to achieve the desired learning outcomes (Carvalho & Goodyear, 2018). In particular, technology supports students with disabilities (Ahmed, 2018) and English language learners (Khalil, 2018).

Schools can provide the technology when necessary however, when students are allowed to use their own devices, it increases their productivity because they are familiar with their own devices (Nuhoglu et al. 2020). When students are allowed to use their own devices, it makes them feel comfortable (Carstens et al. 2021).

The benefits of technology in the classroom, however, are not without discord. There is a belief that technology is a hindrance to learning. It disrupts the classroom (Anshari et al. 2017) leading students to engage in cyber-slacking (Koay & Poon, 2022). Cyber-slacking is the idea of using technology to surf the web, check social media, listen to music or take photos when, instead, the technology should be used for learning.

Misuse of technology also disrupts the learning of others in the classroom (Veziroglu-Celik et al., 2022). Nikolopoulo (2020) found that personal technology leads students to use social networking sites, surf the web, and take photos leading to privacy concerns.

The divide in the literature makes it unclear if technology is an asset or a hindrance to the learning environment.

Theoretical Framework

Constructivists view learners as active rather than passive, where knowledge is not simply gained from the outside world or from a teacher; rather, the individual learner interprets and processes what is received through the senses to create meaningful knowledge.

Exploring students' perceptions on personal technology in the classroom through this lens offers the opportunity to increase our understanding of what needs to be considered when designing learning activities that would allow students to use their cell phone and other personal technology. In true constructivist fashion, it is critical to ask students what they believe about the use of digital technology in the classroom and explore how they believe it should be used and managed. By listening to the voices of secondary students, the learners become active participants in educating the educators so that schools can work to develop a policy that fosters learning and autonomy.

Methods

Methodology

Ethnography was selected as it provided a framework to explore secondary students' perceptions and opinions regarding technology in the classroom. It's an opportunity to understand the thinkings, sayings, and doings of participants in a particular situation (Van Maanen, 1998). Ethnographies provide the landscapes and the details of worlds. They aim to discover, understand, and describe human behaviour holistically, as it occurs naturally within social and cultural contexts. In doing so, ethnographers can look for patterns and themes that ethnographic consumers can take away and use to enhance their own understandings. Ethnography was best suited for this study as the research sought to gain a more in-depth understanding of students' perspectives on the benefits and obstacles of technology use in the classroom to explore how its use engages and disengages them.

Ethnography can also be empowering, as participants become increasingly confident in sharing their perspectives. This methodology aligned with the focus of this research which was to highlight student perspectives to guide perspectives.

Finally, ethnography allows for participants to be collaborators and co-researchers. They are not mere spectators in the research process but are part of the research itself, thus avoiding the superordinate-subordinate relationship between teacher and students. Rather than the researcher being the one to interpret, judge and research, the participants became co-interpreters, co-judges, and co-researchers. This allowed the research data to authentically represent the voice of the participants.

Context and Participants

This research attempted to explore how the use of digital technology in the secondary classroom engages secondary students. This inquiry sought to explore what secondary students had to think, say, and do about technology in a classroom setting and how they viewed its connection to student engagement.

The School

The school where the research took place is a Grade 9-12 secondary school located in the greater-Toronto area. It was a fairly new school that aimed to be paperless, encouraging teachers and students to embrace technology. The primary purpose of an ethnography is to pursue an opportunity to learn within the culture and world of the participants, and the researcher saw this site as a place where she could truly get a sense of how students engage with technology. The school provided a space that could tell more than the researcher knew to ask.

The Participants

In order to respect and value all the students in the classroom, they were each offered the opportunity to participate in the research. This ethnography took place in a class composed of 28 secondary English students in a secondary school in a middle- to upper-class neighbourhood in southern Ontario. The students were enrolled in a Grade 11, university-level English class coded in the Ontario curriculum as ENG3U. Students were expected to meet the Ontario curriculum expectations of the course by critically examining the influence of power. Learning objectives included writing in different forms, analyzing and creating media, and engaging in active reading by critically examining the content. The participants ranged in age from 16 to 17 years old. They met for one period each day from Monday to Friday. The class period was 75 minutes long and students had a total of 110 hours of instructional learning time. Fifteen students (n=15) consented to participate; ten out of the fifteen identified as female (n=10), and five as male (n=5). Fourteen students were in Grade 11 and one student was in Grade 10.

The participants participated in their secondary English class just as the students who weren't part of the study did. Student participants completed assignments and submitted them for evaluation. They engaged in group work, class discussions, conferences, interviews, and activities, all of which could potentially contribute to their final grade. The course experience of the student participants did not differ in any way of those students who didn't participate in the study. The classroom teacher decided when students could use technology and when it needed to be put away. She chose when to interrupt students' cell phone use and she chose the appropriate consequences for when a student was not following instructions. As a participant observer, over the course of five months, a record of behaviours displayed by each student while they were using technology was maintained in a reflective journal with field notes. Participants also completed questionnaires, engaged in conferences with the researcher, and focus group conversations. As such, this was a mixed-methods research study whereby quantitative data was used as a gateway to initiate conversations during conferences and focus group conversations with student participants. How and when the data sources were collected and analyzed is summarized in Table 1. This configuration of data sources allowed the researcher to explore "ethnographic hunch[es]" to create a way of knowing that emerged with the research participants and the researcher (Pink, 2021).

The Digital Setting

The classroom was equipped with a screen and a projector that could be connected to the teacher's laptop. The classroom teacher had a laptop and used a slideshow to accompany her daily lessons and activities. This slideshow was posted to a class website so students could access it, if they needed to

or wanted to. The classroom had an Internet modem in the room allowing the students to easily connect to the Wi-Fi with their personal, digital devices. Every student in the class had a cell phone that had Internet capabilities and many of the students had their own personal computer. Students with their own digital technology controlled when they used it with the teacher using her own professional judgement to encourage a student to redirect if their personal digital technology was distracting them from the classroom learning. At times, students would use their personal digital technology to follow along on the slideshow the teacher was projecting on the whiteboard while, at other times, students would use it to take notes, work on tasks for another class, watch videos or visit social media sites. When the classroom teacher deemed that digital technology was essential as part of the classroom learning or activities, she wheeled in a class set of Chromebooks that students who didn't have a personal computer could access.

Data Collection

During the semester, the classroom teacher was responsible for all teaching, evaluation, student support and parent communication. The researcher was present in the class every week from Monday to Thursday for the entire 75-minute class period. As a participant observer, the researcher kept a record of behaviours displayed by each student participant while they were using technology, and she maintained a reflective journal with field notes as evidence of learning and engagement. How and when the data sources were collected and analyzed is summarized in Table 1.

	Phase 1	Phase 2	Phase 3
Data Source	Students	Students	Students
Methodological Tools	Participant observation Field notes Questionnaire Audiotaped conferences	Participant observation Field notes	Exit questionnaire Audiotaped focus-group discussion
Data Analysis	Cutting and sorting method	Grouping word repetitions Cutting and sorting method	Cutting and sorting method

Table 1: Design Summary

Phase 1

During this phase, the researcher simultaneously took on the roles of participant and observer. As students engaged in classroom activities, classroom work, and learning, she observed their behaviour and listened to their conversations. When students asked for support, the researcher engaged in conversations with them. As students engaged in dialogue with their peers, the researcher functioned as a participant observer. When technology was used by students as part of the learning process or by the teacher as part

of her teaching practice, the researcher took on the role of observer by sharing in the inquiry process and collaborating with students. Participating in the learning process through collaboration allowed the researcher to gain understanding of how students liked to use technology while in the classroom.

Phase 1 also included an entry questionnaire which was followed up with an entry conference. The questionnaire allowed participants to describe their ability and skill with using technology, their preferences in using technology as a tool to present their work, and their access to technology inside and outside of the classroom. The questionnaire served as an expedient way for the researcher to learn about individual students; questionnaire responses served as an icebreaker and an effective starting point for entry conferences. This reinforced the instrument's validity because data was not initially analyzed from the questionnaire. Instead, the researcher used the questionnaire to engage in conferences with the participants. This allowed participants to clarify, build on, modify, and change their answers.

Each participant engaged in a one-on-one conference with the researcher, which provided an opportunity to dig more deeply into the responses provided in the questionnaire. During the conference, participants were invited to elaborate on their questionnaire responses to build a deeper understanding of their engagement or lack of engagement with technology. Participants were able to explain their responses in the entry questionnaire and discuss any inconsistencies.

Conferences were audio-recorded so they could be transcribed. Each participant was given a transcription of his or her conference to read and make any necessary corrections. Through participant verification, student participants were allowed to add, change, or remove anything. Participant verification also ensured that participants were represented authentically and that their perspectives were captured in such a way that they felt honoured. It also reinforced that they were co-researchers. The participant verification ensured the validity of the transcript; it served to avoid significant errors and inconsistencies in the transcript that could have had an impact on the quality of the transcript and, as a result, on the quality of the entirety of the research.

Phase 2

Throughout Phase 2, the data-collection procedures of observation, individual and group conferences, and journaling were continued, and data was consistently analyzed as a way to inform the researcher's understanding of how students were engaging with technology.

Student engagement requires far more than simple observation. It also requires conversation and discussion with students in order to ensure that the interpretation of engagement or disengagement is actually grounded in the students' experience and reflective of how the student is feeling. Engagement is an active process that permeates a student's experience of school and, for the purposes of this inquiry, a student's experience of technology. It is not as simple as calculating the amount of time spent on task or off task, or getting a high mark on an evaluation task. At its core, engagement is a deeply affective experience rooted in subjective experience, and the researcher can, therefore, not assume that what she saw was engagement or disengagement without participant validation.

Field notes consisting of the researcher's observations were always validated with a conversation with the participant to ensure that the field notes had not misrepresented what was witnessed.

Phase 3

In order to gain a holistic understanding of student engagement with technology, Phase 3 employed discussions and a questionnaire to invite participants to reflect on the use of technology during the course and provide overall comments, feedback, and conclusions.

The questionnaire participants completed was similar to the one they completed in Phase 1. This provided an opportunity for students to reflect back on their engagement in the class over the course of the semester; it also gave them a chance to provide recommendations for use of technology in future classes. Again, this was an expedient way for the researcher to gather information, and it allowed her to look at changes over time in student response that could be juxtaposed alongside the researcher's observations.

After the exit questionnaire, participants were to engage in a focus-group discussion in order to reflect on what classroom activities they found most valuable and interesting and to attempt to evaluate and explain why. The intent of the focus group was to elicit a greater point of view from the participants than would have been possible with a researcher-dominated interview. Focus groups allow the researcher to elicit as many points of view as possible, allowing the research to create a portrait of a combined perspective.

There were three guiding questions that provided a framework for the conversations and to bring uniformity across the two groups while also allowing the students' voices to emerge and dominate the data. The group conversation allowed participants to share, observe, and build on the comments of others to create a comfortable conversation that allowed for relaxed spontaneity. It also allowed the sharing of sensitive information and disagreeing with one another, creating a space for a more inclusive conversation (Colom, 2021).

Data Analysis

There is no quick formula that can be used to analyze data from an ethnography. Marshall and Rossman (2006) define qualitative data analysis as:

the process of bringing order, structure, and meaning to the mass of collected data. It is a messy, ambiguous, time-consuming, creative, and fascinating process. It does not proceed in a linear fashion; it is not neat. Qualitative data analysis is a search for general statements about relationships among categories of data. (p. 111)

This method of analysis allowed the researcher to substantiate new meaning from the data obtained.

Data were analyzed in a similar way for patterns and commonalities so that common and divergent themes could be identified (Strauss & Corbin, 1998). Initial analysis looked for similarities and differences in content and patterns of keywords-in-context (Leech & Onwuegbuzie, 2007) using both the cut-and-sort method and the word-repetition method identified by Ryan and Bernard (2003). A second

cycle of coding arrived at emergent themes—patterns that emerged through participant responses. This was done in order to draw deeper meaning and understanding from participants to understand their perception of technology integration and its impact on their engagement.

Ethnography is, at its core, a storytelling institution (Van Maanen, 2011) that values collaboration and dialogue with participants, openness, reflexivity, and respect in a way that allows for their perspectives to be presented accurately and fairly. Student insights—revealed using their words and transcribed conversations—were only woven together once the ethnography had been experienced and read firsthand (Van Maanen, 1995). The participants took an active role in the research. During the data-collection stage and through an ongoing dialogue, they co-interpreted to create the final multi-voiced product that is this research. Snippets of conversations and field notes created a montage of the perspectives of participants, and this montage intersected with the researcher’s own interpretations to answer the research question. This led to a systematic effort of turning fieldwork into works to help understand, guided by the following overarching themes:

- a) The use of devices as an essential learning tool; and
- b) Devices as a distraction that can be managed with explicit intervention

Results

The results demonstrate that access to personal technology can be both a benefit and a hindrance, as it echoes the dichotomous finding of Phillips & Landhuis (2022) who observed that the Internet leads to procrastination but is paradoxically also an important learning tool.

Devices as a Learning Tool

All participants had regular and consistent access to personal devices. On numerous occasions, students used their personal technological devices to assist them in meeting classroom expectations. For example, 6 of the participants used their phones to take pictures of resources posted around the classroom so that they could be referred to at another time. One participant consistently thoughtfully listened to the class discussion and observed the teacher make notes of the key ideas on the whiteboard. The participant then took a picture of the whiteboard. She explained that this strategy allowed her to “just listen” and not worry about trying to “write it [all] down.”

When given access to technology to produce a final product to be submitted for evaluation, all fifteen of the participants believed that technology helped them produce a better final product than they would have without technology. Eight strongly agreed, with another 6 agreeing. One student was neutral; she explained that when she uses technology, she feels that her product benefits from the technology but if she didn’t have technology, she could find another way to make her work great.

Having devices that put Internet access at their fingertips was particularly helpful to students who identified as English Language Learners (ELL). Two of the participants self-identified as ELL. On a day when students were asked to trade their writing with a partner and offer assessment feedback, one participant who was ELL used her phone to translate the entire piece into Korean first and then she was able to provide assessment feedback to her classmate. A second participant who was ELL used her cell

phone while the class was reading Shakespeare. She had downloaded the Chinese version of the play so that she could understand what the class was reading out loud and make sense of the class discussions. She said, “it makes so much sense when I...read it on my phone.”

Over the course of the research, all 15 of the participants were seen to be engaging in deeper learning as a result of having access to their personal technology. On one day, students were asked to read an excerpt of an essay and then answer questions. After reading the essay excerpt, a participant was fixated by his phone. The researcher inferred he was off task and noted it in the field notes however, when she walked over to redirect him, he explained that he was reading the original essay online because he “needed more” after reading the excerpt the teacher provided. While reading Shakespeare, every single participant was seen to access a dictionary or the glossary in the online text to look up what particular words meant.

Thirteen of the participants agreed that technology helped them learn. (Table 2). One participant said that if he does not “know something, [he] can look up something quickly on [his] phone.” Another participant felt that “having access to the Internet connect[s] [her] with knowledge” while a different participant added that it allows him “to do research and what not.” A different participant elaborated by explaining that “sometimes when you’re doing an analytical question or something like that and you want to look up the close-up or themes of some things that you want a more clear view of...[you] can search it up” and that can help you “think more clearly.” Another participant echoed this thing by saying, “it’s a great way to access information to further your knowledge” and to “come up with different types of ideas.” A male participant explained that he likes having access to the Internet for research because he “can find a lot of different perspectives on the [topic], because there’s so many different [web]sites” and by reading other perspectives, he can “use it to come up with [his] own perspective.” All of these thoughts support the notion that personal technology helps to build knowledge and is a tool to access information.

Two participants offered a neutral stance. The neutral stance was further explored: both students felt that access to technology does help them learn but if they didn’t have technology, they would still learn but in a different way. They felt that whether technology is used or not, they would have learned the same.

Beyond using technology to make meaning of written text, technology supported students during the editing process. All 15 participants used technology to type work for evaluation. They preferred using Google Docs over pen and paper because it allowed them to edit paragraphs by “moving entire paragraph[s] to another spot in th[eir] paper”, they could use the online thesaurus to find a “better word” to use in their writing or they could easily share their work with a peer within the class or beyond the class to read it and provide comments.

When asked specifically about classroom policies and school policies about cell phone and other personal device use, all fifteen participants indicated that they appreciated being able to bring their own devices to school. They noted the convenience of having their cell phone to “quickly look up something” or the ease of being able to use their own computer “because [they] just know where everything is” making the familiarity of the device more user-friendly. All fifteen participants said that the “Internet is really good” in the school making it easy to “use our devices all over the school.”

Forum on Public Policy

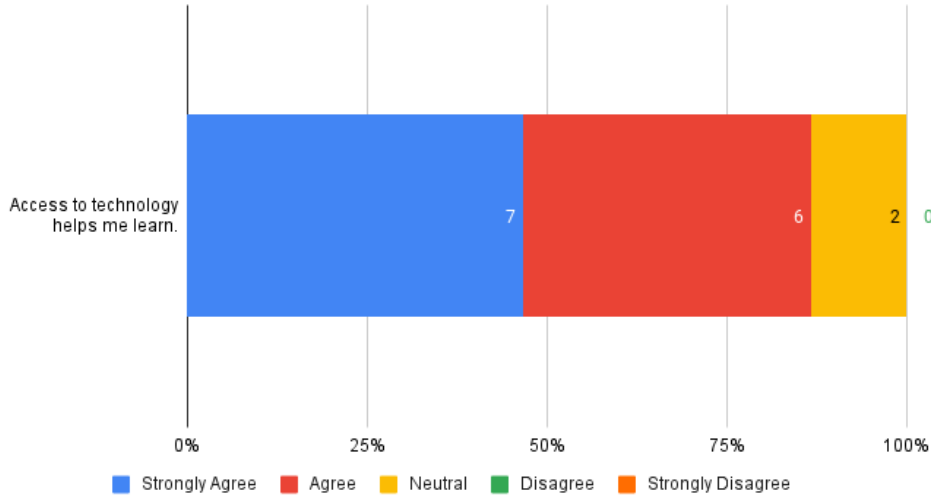


Table 2: Access to technology as a learning tool.

Managing Disruptions

All participants acknowledged that technology has distracted them from their learning (Table 3). One participant called the distractions “annoying” because she cannot ignore the box that pops up on her phone. “A little message will pop up and then [the student] will click it and then that just branches off into the next thing and the next thing and the next thing.” This can result in “so many different windows open” and then the feeling of being overwhelmed. This highlights that an off-task activity may not always be a conscientious choice because of the attractive allure of technology.

While all the participants had been distracted by their technology, several participants highlighted strategies they had to overcome the distraction. When it came to cell phones, one student puts “it in [her] backpack.” Another student will sometimes hear her phone keep “buzzing because [she’s] got a lot of notifications” but “because it’s too disturbing” she will turn it off and put it in her bag. Another student even said that when she is trying to focus, she “make[s] sure it’s put away and on silence so that it will not be bothersome to [her].”

Four of the participants supported gentle redirects by the teacher. One participant said that when a “teacher notices your off task, it’s embarrassing” and another participant noted that he often doesn’t “even realize [he’s] been on his phone for so long.” This was echoed in the field notes. The researcher noticed that students would often be motivated and driven to start a task, but when they had access to personal devices, students would often check their social-media accounts, take selfies, browse the Internet, watch movies, or play video games. Students often had good intentions in working on a task, but then they would veer off task. This start and stop process of working on a task often led some students to not finishing the task they were expected to complete while in class. In this sense, the technology acted as a gateway to activities that lead to distraction. Another participant said that when a teacher re-focused them, “it shows the teacher notices me” and another participant added that it shows that the teacher is “paying attention.” One student explained that for “the kids who want to do well,” this would work “but for the kids who don’t really care,” they are just going to be distracted regardless.

The researcher’s field notes allowed her to identify that for several students, the cell phone was a visible indicator that the student was struggling with a task. For two of the participants in particular, playing with their cell phones appeared to be a way to disengage when a task was too difficult for them or when they hit a struggle or obstacle. If, however, students were allowed to work with a partner or in a group during a challenging task, students were rarely seen on their devices.

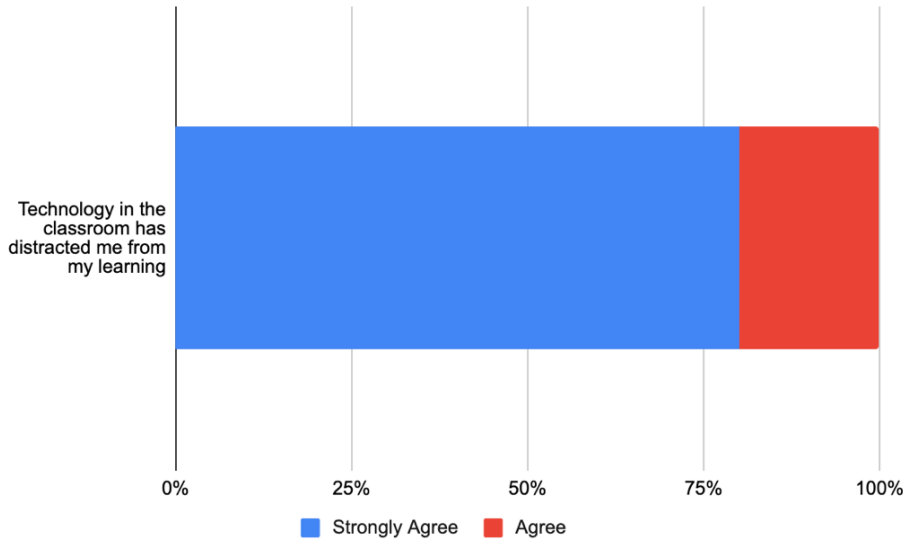


Table 3: Access to technology as distraction

Discussion

This research was driven by understanding how secondary students use technology in the classroom and the responses from all fifteen participants indicate that technology is an effective learning tool but also an alluring distraction. When students have access to technology while in the classroom, it inspires them to pursue new information and resources, prompts them to edit more thoroughly, and, particularly, supports English language learners in meeting classroom expectations. When students have access to their technology while in the classroom, they may browse the Internet, take selfies, check their social media accounts, watch videos, and play video games, which leads to a disruption in the learning process.

Access to technology within the secondary classroom has undeniable advantages but it also results in frequent distraction. As a result, we need to develop ways to help learners control and redirect their attention, and we need to give “very serious thought to finding ways to use the technology to minimize distraction and support people in developing their own strategies for finding focus” (Rose, 2010, p. 45). As well, we need to give students opportunities to pause, reflect, and problem solve so they can learn how to take intentional steps to responsibly use their technology. In sum, rather than making decisions for students, we need to decide with them.

Returning to the Field

After the completion of the ethnographic research and being equipped with her research's conclusions, the researcher returned to her position as a secondary classroom teacher and she was able to apply the lessons the student participants offered to create a classroom that allowed students to use technology to construct their own knowledge so that they were engaged in their learning. Then the COVID-19 pandemic hit the world and moved our classrooms online. With the return to the bricks and mortar classrooms, the researcher noticed that although many facets of engagement have changed, so much has stayed the same. The insights the researcher's students offered during the ethnographic research as well as the learning evolving through the researcher's own reflective practice has offered some additional insights. These insights are offered in the first person so that they can be separated from the voice of the participants in the classroom ethnography. During the classroom ethnography, the researcher was just that – a researcher. In these reflections, the researcher was the teacher and that allowed her to see things from a different position. This positionality has led the researcher to intertwine students' words with her own words to create lessons to teach by. These lessons offer educators tangible things that can be implemented in the classroom. The existing research negates the voice of secondary students. These lessons fulfill the aim of this research which was to amplify the voice of secondary students in allowing them to share how digital technology can be used to foster student engagement.

Lessons to Teach By

Use Technology to Allow Students to Inquire

Students believe “teachers should be physically teaching” and technology should not be used to “giv[e] information to regurgitate and retain.” Many students want the teacher to exclude technology from their teaching, preferring the opportunity to listen, talk, collaborate and move. The move to online learning during the pandemic had me giving lessons online. I spent hours making videos that explicitly taught important skills so that students could watch and re-watch the videos as necessary. It didn't work. While we were online, students preferred to move into smaller breakout rooms with their peers to construct knowledge together. Moreover, when I offered these videos as a resource within my classroom, upon the return to the physical classroom environment, the number of views on the videos revealed that students didn't watch them. This confirms that technology needs to move from “didactic to constructivist pedagogy” if we want to engage our learners (Salami & Karimabadi, 2020, p. 152). The teacher is the most significant factor in student engagement and students want to learn from their teacher rather than to use technology to consume information that is being given to them to absorb.

Students “like being able to come up with different types of ideas...things we didn't discuss in class.” Rather than adopting a didactic approach to teaching, technology should give students the opportunity to construct their own knowledge. It should change the way of teaching by helping to integrate new ideas and foster critical thinking (Erbaş, et. al., 2021). Technology should allow students to explore their own curiosity in what they want to learn and should position the teacher to act as a guide or facilitator of learning.

Student participants believe that the Internet is “a great way to access information to further your knowledge” and to “come up with different types of ideas.” The participants validated that the Internet provides them with quick access to information to allow them to acquire knowledge (Szymkowiak, 2021).

One participant explained that he likes using it as a tool for research because he “can find a lot of different perspectives on the [topic], because there’s so many different [web]sites” and by reading other perspectives, he can “use it to come up with [his] own perspective.”

Foster Connection

Technology is an opportunity to have students collaborate with each other, including those who are introverts or extroverts. “Introverted students feel more engaged” because it allows students to process information prior to sharing it (Sawang, et al., 2017, p. 16-17). However, it’s essential that the teacher plays a crucial role in engaging students in online collaboration. It is not enough to design activities and leave it to the students to collaborate. The teacher needs to facilitate activities to create social interaction (Yates, et al., 2020). The teacher needs to activate learners and invite them to talk. Only then can technology be a tool to foster collaboration by creating opportunities for students to work with their peers by sharing ideas and resources.

The participants in this ethnography value technology’s ability to “connect[t] the teacher and student together” because it’s “two-way.” Participants valued the ability to seek ongoing support through tools such as GoogleDoc and email. It’s an opportunity to get feedback and support if they need clarification or want assessment feedback. A student said, “I like being able to share my GoogleDoc with the teacher so she can look at it...I like that I can connect with other people in the class by working on a single document at the same time.”

Constant connectivity leads to continual distraction which can lead to task-unrelated tasks (Wiradhany, et al., 2020). As such, students need to be provided with opportunities for movement, talk, and collaboration. Engaging in movement during the learning process allows them to “think more clearly” and “see more clearly.” With the amount of time I sat on a chair speaking to a screen during the period of remote learning due to the pandemic, I understand the desire to want to physically move. Moreover, many students were disconnected from their peers and lacked the opportunity to socialize with them. Activities that allow students to move around the room and connect with their classmates, prompt students to resist the allure of their technology. This allows them to engage in participatory and collaborative learning allowing them to return to their desks and use their technology in a more task-centered way.

Teach How to Use (and Not Use) It

Technology has created an age of interruption because of the pings of text messages, rings of phone calls, and bings of social media alerts. This “brain overload” can make it hard for students to concentrate; particularly low performing students (Bergdahl, 2020).

Students know that their technology “is a distraction” that often gets “annoying” but they are unwilling to give up the “privilege of constant access” to their technology. Instead, they want to learn how to manage their technology effectively. They appreciate gentle reminders to “get back on track” and want the teacher to help them realise “how much time has been wasted.”

Students constantly have technology at their fingertips but it doesn't mean that they know how and when to use it. Students need support to become strategic learners who are able to access information when it is needed and to know when to resist its allure. During the remote learning that was the result of the COVID pandemic, many students spent 6-18 months learning with and through their technology. The move back into the school building is the opportunity for the teacher to explicitly teach students when technology can be a useful tool but also how it can be a distraction. Students have been tethered to their devices and now they're having difficulty toggling away from it. A student said, "sometimes, I don't even realize that I'm looking at my phone...I didn't even know others thought I was being rude...tell me to put it away."

Putting the phone away completely isn't always realistic since "the teacher has their phone on the desk too" but ensuring it is "on silence" and "turning [the phone] over and not looking at it" are techniques the teacher can model and explicitly teach. Asking students to put it away, out of sight appears to create anxiety with the return to the classroom. This has led to a new pathology known as nomophobia which is discomfort or anxiety felt when an individual does not have access to their mobile device (Farooqui, et al., 2019). Instead, asking students to keep it face down on their desk may lead to greater obedience. The proximity of the device to their fingertips may appease students and lead to a greater willingness to keep it out of their hands. In addition, taking tech breaks "so [students] can check what's going on" and then "returning to the task" are helpful in minimizing the allure of technology while also mitigating the anxiety students feel when they cannot access their technology.

Conclusion

Technology is *only* a tool to engage; it is not *the* way to engage. One of the most important skills to foster in today's twenty-first century learners is the ability to effectively communicate, collaborate and critically think (Liesa-Orus et al., 2020). This belief was held before the pandemic and it still permeates. There has been a commonplace assumption that digital technology inherently engages students however, this research debunks this assumption. Technology contributes to engagement when it allows students to construct or co-construct knowledge with their peers. The skilful integration and negotiation of technology with the teacher is what makes the difference between engagement and disengagement. Technology is simply a tool that allows educators to meet students where they are and enhance their overall learning experience. Despite the amount of learning that happened through technology and with technology during the pandemic, students are still engaged by technology however, it is not the panacea to education. It can enhance students' learning experiences, if it is used to allow students to inquire, connect and disconnect which are the facets of education that emergency remote education eroded.

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