The dark side of an educational collective: Interviews with student cyborgs

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"In the newly emerging paradigm, we have substituted the notion of collective – defined as an exchange of human and nonhuman properties inside a corporate body – for the tainted word "society ... humans, for millions of years, have extended their social relations to other actants with which, with whom, they have swapped many properties, and with which, with whom, they form collectives. "" – Bruno Latour.

Abstract

In my independent research project, I theorise the emergence of the "student cyborg," as a new kind of actant in an educational collective of humans and technology by drawing on the theoretical insights of Bruno Latour. The educational collective, in which this research is based, is specific to Grenfell Campus of Memorial University in Corner Brook, Newfoundland. I conducted seven semi-structured interviews with undergraduate university students who had experience with educational technology (e.g. D2L). There are four major findings of my research: 1) There were two advantages associated with using technology that were identified by students in my interviews. The first advantage, was the email service to contact their professors. Email was seen as a mediator in student's interactions with professors which could ease anxiety of face to face communication. The second advantage that emerged through my interviews was the convenience of using technology in the classroom for taking notes or when it came to looking things up online. My interviewees felt that it made the process of taking notes down faster, while also enabling them to look up topics online without having to ask a question in class. Also, student liked having technology on them at all times as it allowed them to stay in contact with others where ever they were. 2) Students also expressed three disadvantages during my

interviews. The first disadvantage was that technology can be a distraction in the classroom, especially when students are texting rather than taking notes. The second disadvantage was that programs like D2L (Distance learning) can create a barrier between students and professors. My interviewees felt that D2L had less quality because there was no face-to-face communication at all. The third disadvantage is that technology can cause some students anxiety. Depending on the courses that my informants were taking, they had to learn how to use new programs which can evoked anxiety. 3) There is an unequal access to different technologies for students. The students that I interviewed came from different class backgrounds which gave them access to different types of technology, but also produced differences in knowledge's about the technology. The students from more advantaged economic backgrounds considered themselves to be more tech-savvy. 4) Finally, students described that the technology with which they interacted with operates more as an "actant" than as a "tool". Most of my participants could not imagine leaving their homes without their laptop.

Introduction

The educational landscape has changed and according to Chris Riedel (2014) some of the most relevant educational changes include, "Personal Access to Mobile Devices" which Riedel gives the example that, computers and cell phones are becoming more affordable. The second is "Internet Connectivity" which means that now you can get Wi-Fi almost anywhere and while in the classroom. Then the third is, "the use of Video for Classwork and Homework" which he explains as, professors who are now providing links for tutoring and to extra work sheets for students. The fourth is, "Mobile Devices for Schoolwork" which mentions how students are allowed to have computers and tablets in class to take notes. And the final one that was relevant

to my study was "An increased Interest in Online Learning" which he states as students being able to do the course work on their own time and not have to make the commute to campus.

As a student I have often felt disadvantaged by the technology which have become a large part of my university education. I personally do not consider myself very tech-savvy as I only can do the basic operations on my computer and along with my smart phone and because of this, having to learn to do things that are outside these basic operations I find that I do not have the background to help me learn the programs at a faster pace like some of my peers. Growing up, if I wanted my own phone or my own computer I have had to buy it myself, as I have been working a part time job since I was 14 years old. Growing up my mom worked out of our home for 13 years and then got another job while my dad has worked seasonal jobs. And although growing up, we had a desktop computer by the time I was in grade 2, I did not get my own a laptop until I was in grade 10 when I managed to finally save enough money to buy one myself. After saving up and buying myself one and I had also bought my first cell phone out of my first paycheck when I was in grade 9. The technologies that that I own are not a Mac book or an iPhone; they are basic technologies I need in order to conduct research and type my papers. However they sever the purpose I need them for, and if they cannot do something that I need, I have to use the school computers or use a friend's computer. Along with many other students at Grenfell, I have the basic technologies that I can do research on and type my papers.

In the university I am attending, all the classrooms have some of the technologies that are used daily. In the classes I and my informants encounter many technologies that include: a projector, a computer, "My Grenfell" and/or "D2L" (distance learning). I have had to learn how to use different technologies and new programs which can often be incredibly time consuming. When it comes to having to learn how to use a new program or a new technology I have had to

rely on my professors to assist me. And because of the help of professors, I have gained more knowledge about the programs that I use. I have observed that professors in different disciplines use a different variety of educational technologies than others professors. For an example, some professors post all the course notes online, while other professors use no technology at all. For different courses, different technology is needed to be accessed by students.

Based on my experience in university, technology is so integral to this educational institution, therefore education has become increasingly technologically based and thus no longer a question of choice for students to engage with technology. Today, it is expected that all papers are typed and researched online. The majority of communication between students and professors occurs through email. Technology use is simply part of the course curriculum these days.   If you don't have your own personal computer or laptop you have to use the computers on campus which are not always accessible when you need them. Rather, students have to use technology for course requirements. And although the library has computers for students to use during the For instance, students only have access to the library's computers during the day. Since, the library is not open 24/7, students have to work around the library's operation times to get their work completed. This can be difficult, especially for students who work during the day. Some classes have restrictions on the types of font, sizing and spacing that can be used in papers. Some of the technologies that can be considered basic technologies are: projectors, computers and programs that are used for paper writing. However, there are also more advanced technologies, which include only being able to reach certain professors through the use of email, having to know how to use certain software that is accepted by different professors and the use of distance education (referred to as D2L at Grenfell).

This paper is divided into four sections. In the first section of this paper I will elaborate the theoretical framework of my research with a specific focus on Latour's theory of human and nonhuman collectives. In the second section, I provide a general overview of the literature on learning assistance technology in universities. In the third section, I provide an outline of my methods of research. Finally, in the fourth section I report and discuss my findings in relation to my theoretical framework and literature review.

Theoretical Framework: Latour's Collective of Humans and Nonhumans

For most people the technologies they use, such as their cell phone, or a computer, are thought of as just a tools. This idea of technology as a tool can be seen in the university institution where students are socialized to think of the technology that is just at their fingertips as nothing more than tools. This way of looking at technology is critiqued by Bruno Latour. In Latour's theory he theorizes that we live in a collective with nonhumans as well as humans. He in this theory Latour explains that the non-humans have an effect on humans because nonhumans can act alone and that they can have their own goals. Latour sees that humans and nonhumans are in a symmetrical relationship. During interactions between humans and non-humans both actants are affected. Technology and the social are considered to be a hybrid and this showcases the active participation between the two acting on each other. For example, when students interact with technology, a new actant is created and therefore the intensions that the student had in the beginning have changed with this interaction. The new actant that is being created is a kind of referred to as a student cyborg that cannot be reduced to either one of its parts but is something new entirely. A student cyborg is the student that has entered into a relationship with technology, and cannot complete their class requirements without the help of technology of which they are now a part. Because of this, students now live in a collective with nonhumans. A student in

university has to type their papers for class which cannot be done without a computer. And

students also have to do a lot of research, which now can now be done format home through

interacting with the computer because they can which enables students to access the library

online. Wand without that access from home, without interacting with the computer, students

would not be able to work as efficiently or be able to hand their assignments in to their

professors on time.

      In the article "A Collective of Humans and Nonhumans" Latour outlines three key

processes, which are: 1) goals are translated 2) meaning is articulated and 3) programs of action

are delegated. In terms of goals being translated, Latour simply means that our goals as humans

change when we interact with nonhumans. Latour uses the example of the gunman how human

and nonhuman interaction creates a new actant. The gunman is different than just a human who

may be angry is angry, and a gunman is also different than just a gun sitting on a table. When a

human is angry they might just want to hit someone and only want to inflict pain, however when

a human picks up a gun and becomes a gunman they then can kill inflict death to someone rather

than just inflict minor pain. This is what Latour is talking about when he says that our intentions

change when we interact with nonhumans; they change us as we change them.

      In an educational collective we see this with students and their computers. With a

computer a student can type a paper faster than having to write it out, but it also can change the

way in which students think about writing their paper their grades and the grade they work to

achieve. A computer has a spell checker and it also corrects bad grammar which a student can

then use to improve the quality of their work and achieve the better grade.

      In terms of the when speaking of meanings being articulated, Latour argues that is talking

about how the same behaviour can have different meanings depending on the nonhuman actant

we interact with. In other words, the same action can have its meaning articulated differently – it can Two actions can be the same, however the two same actions have two different meanings. In his article, Latour uses the example of a speed bump. If there is a sign placed in a school zone that tells drivers to slow down so they do not kill students, the drivers that slow down are doing it so they do not hurt any students. However, when speed bumps are placed in a school zone, drivers slow down for the speed bump also however it is because they do not want to beat up the bottom of their cars, not because they do not want to hurt any students. The actions are the same, the cars are still slowing down in a school zone, but the drivers are slowing down for two different reasons.

In the educational collective of students and nonhumans, this can be seen in the classroom. Before if a student missed something a professor said or did not understand the reference that was made they could turn to their friends and ask them. However, now there is no communication needed because, for the students that have a computer or tablet, they can just in class to take notes in class, they are able to go online and just look up what their professor had said mentioned in class.

According to Latour, programs of action are also delegated. Latour is talking about how different actions are delegated or used in different ways. In his work, Latour uses the same example of the speed bump to discuss how actions can be delegated into non humans.   He and states that in French, speed bump means "sleeping policemen,", and therefore when cars are slowing down their actions are delegated through the meaning of the speed bump. For an example, in the educational collective, an entire educational course education is now being delegated into D2L - a course online.

The Educational Collective

Latour is relevant to framing the focus of my research in two ways: 1) I focus on the educational collective of humans and nonhumans and 2) the student cyborg that emerges as a new s as a newly emerging actant in this collective. A shift in intensions is caused by the interaction of a human (the student) and the non-human (technology). A collective is defined by Latour as, "an exchange of human and non-human properties" (193). Within this collective, student cyborgs in this case are created through that same exchange of properties. Latour states "that goals are refined by associations with nonhuman's actants, and that action that is property of the whole association, not only of those actants called humans" (183). But Latour states that in this collective, both humans and nonhumans should be described as equally as actants, in the sense that technology should not be viewed as something we use but as its own actant.

When it comes to the educational collective, there is no longer a choice, students have to engage with technology for their class requirements. Students for different courses have to interact with nonhumans in different way, however they have to interact with them. Because the university landscape has changed to be more technological and more digital, students are able to engage more and more with technology in their classes and are able to bring the school services into their homes. As Latour argues talks about in his article, the intentions of humans change when they humans interact with nonhumans, and now student's intentions have are changing changed through their interactions with their computers. When students interact with their computers, they are no longer engaging with other humans, but are relying on technology for their communication and information. Students are more likely to look something up than as their professors, which is a different intentions. When students ask their professors to explain on a topic they are engaging with other humans, however when students just look something up on their computer they are relying on what they can find online about the topic.

Student Cyborgs

Because students are now able to engage with more technology and that it is now acceptable for students to use technology in classes now, they are evermore now emerging as student cyborgs. As a result, student's intensions have changed along with many of their actions, and therefore they have thus become a new actant in the collective. To break this down the relationship like Latour does, think of actants as humans and educational technologies in the following relationships : 1) Actant one is a student that can think, 2) actant two is a computer that can do research and type papers, 3) actant three which is the student cyborg which can type becomes the student that uses a computer to type papers, conduct do research, and get to be able to get higher marks on their papers than the student who hand writes the paper.

Blackboxing

Latour also states that many technologies go through "blackboxing". And even the technology that students are using is subject to what Latour calls "blackboxing". Blackboxing is

> "a process that makes the joint production of actors and artifacts entirely opaque … for instance, an overhead projector. It is a point in a sequence of action (in a lecture, say), a silent and mute intermediary determined by its function. Now suppose the projector breaks down. The crisis reminds us of the projector's existence" (183).

There are many technologies that are used at Grenfell that can become subject to "blackboxing" such as, projectors and even computers for many students in the generation that has entered university in the last couple of years. Some of the technologies that have undergone blackboxing at Grenfell are projects, printers, the internet, and computers. It is not until these technologies are not working right that students notice them, however also most students do not truly understand how these technologies actually work as they only see the computer screen, for example.

Donna Haraway

In A Cyborg Manifesto Donna Haraway talks about separating machines and humans only to look at them together. Haraway states that

> "The second leaky distinction is between animal-human (organism) and machine. Pre-cybernetic machines could be haunted; there was always the spectre of the ghost in the machine... Late twentieth-century machines have made thoroughly ambiguous the difference between natural and artificial, mind and body, self-developing and externally designed, and many other distinctions that used to apply to organisms and machines. Our machines are disturbingly lively, and we ourselves frighteningly inert" (151).

Here Haraway demonstrates the boundary between symbolic and material objects. Our experiences as cyborgs are thus both fragmented, yet whole. Similarly, our experience as student cyborgs is fragmented but whole. Just as projectors are seen as projectors, students are seen primarily as students. However there are many other dimensions that go into accomplishing that role of student such as their use of a computer, or a cell phone, or a tablet., Students need these technologies to complete their university degrees however they are not seen, the student is seen as a whole, just as a student. However, when you take a closer look at the student cyborg you see the different fragments that they are broken up into, to become a successful student. A student needs to know how to use a computer for many different functions such as, sending emails, typing papers, taking notes, conducting research, PowerPoint presentations, and many more functions. Students also have to be tech-savvy when trying to learn how to use new programs for their different classes such as statistical work. Students are fragmented into the different knowledge's they need to have when it comes to technology.

When looking at technology and humans in a symmetrical relationship they both need to be thought of as of equals as they are a part of human life and have now become a staple in a university student's life. For Donna Haraway, the cyborg is created when a woman is fragmented into many different parts but yet is still seen as a woman. For me, the "student cyborg" is created when students enter into a relationship with their technology, either computers or a smart phone,

but are still seen as a student. Students that are in university or are about to enter university no longer have a choice. Students must now enter into relationships with nonhumans and become the student with a computer.

Literature Review

According to Scott Waltz, who draws on Latour's theoretical framework, had the idea of living in a collective can be seen in universities. Technology that is used in education affects students and then affects how students interact with the technology. Waltz draws on Latour when looking at the educational setting and states that, "things do not play a role in an educational setting by acting apart from us, either as material objects or as locations for signification; rather, they interact with us as surprising co-creators of educational environments" (158). Waltz's findings are in support of a Latourian framework for understanding these interactions between humans and nonhumans. Waltz found that many of the technologies are blackboxed as Latour suggests, and that because of this blackboxing of technology students do not think of them as something they engage with but rather as a tool. However as Waltz unpacked the blackbox of the educational collective, he found that students are in relationships with the nonhumans they interact with, and Waltz continued to identify all the different nonhumans in the collective that most students forget exist.

Although technology of the nonhumans are a big part of human life, something that Latour does not mention is the fact that people will have different access to the technology or different nonhumans which then in turn makes different kinds of actants. Because we are talking about humans and how they have different access to different knowledge and materials, there are newly emerging inequalities among the new actants. In the "Digital Reproduction of Inequality" by Eszter Hargittai states that "a more refined approach considers different aspects of the divide,

focusing on such details as quality equipment, autonomy use, the presence of social support networks, experience and user skills, in addition to difference in types of uses" (936). In this article Hargittai found different inequalities that emerge with new advances in technology. These new advantages in technology are only available to more advantaged groups while less advantaged groups are only able to afford the cheaper versions of technology. This is where the new forms of inequality are forming.

As Susanna Bohmer (1991) states in the article "Teaching Privileged Students about Gender, Race, and Class Oppression"

> "a disadvantaged class background, for example reduces access to educational qualifications, which in turn limits one's chances in the labor market … a middle or upper class background entails access to educational qualifications, which in turn are required to obtain advantaged positions in the labor market" (157).

Bohmer discusses the complex intersection of oppression in material and cultural forms. Students at Grenfell are from a variety of backgrounds and have a wide range of how they are paying for their schooling. My informants for example are either paying for themselves, have a student loan, a scholarship, or their parents are paying for them. The different backgrounds of my informants can be visibly seen through the different technologies they own because they are able or unable to obtain certain brands much like myself.

Technology used in the classroom

Texting and emails as important technologies in university

In the article "Using Texting to Support Student Transition to University" written by Dave Harley et al it is suggested that texting may be a way to help the transition into university for the tech-savvy generation. This research was qualitative as the researchers conducted 30 undergraduate university student interviews. The findings of this study are that first year students use their phones for everyday communication and that universities should take advantage of that

and use SMS texting as a way for professors and students to interact on a professional level such

as asking questions about class, and it would be easier on students because they use their phones

daily. Mobile phones are a staple in students' lives, as for many it is a connection to home

however it can also be used in an educational sense. Harley states:

> "if universities wish to provide form of social support which will encourage engagement with their institutions, then an awareness of the social importance of texting and an engagement with this medium is essential. It would be a missed opportunity if universities were to continue to neglect texting as a potential means of supporting first year students when these very same students are already conducting a substantial part of their lives via this medium" (8).

> In addition to texting, Brill and Galloway (2007) argue that email is a very helpful too for

both students and professors. In Brill and Galloway's (2007) article they state that:

> "One simple but important way in which technology has altered the traditional teaching-learning process is through the use of email. This … tool allows instructor-student interaction to continue outside the classroom without traditional time and space constraints. This tool is particularly helpful … for students who are unwilling to pose their questions in such an open environment" (101)

Cell phones can be integrated into communication just by the use of cell phones to be able to

check emails or have emails forwarded to the cell phone in the form of a text message. Students

are able to stay connected to both their professors and other students with their phones either

through email or texting. Being able to stay connected to people is what makes students

comfortable but it also gives them another way to get information when they are not comfortable

talking to their professors face to face.

Issues while using technology

When students are having to use technology for their classes, there are different issues that arise

such as anxieties, and how students being to feel with all the technology surrounding them.

When it comes to computer anxiety an article written by Matthew Meuter et al titled "The

Influence of Technology Anxiety on Consumer use and Experiences with Self-service

Technology," suggests that, there is less physical presence of the new advances in technology that this may be the cause of computer anxiety. Meuter argues that there needs to be a more positive introduction of these types of technologies to consumers and even to students to reduce the anxiety that students feel.

Other research that has been done on technology in university classrooms is the article "Technology Acceptance and Social Networking in Distance Learning" written by Jaw-Shin Lee et al. In this study three different surveys were administered to 31 students to examine their attitudes toward using distance learning and to see how these attitudes changed over time. The findings of this study were that students had many concerns when it came to using distance learning. Some of the concerns with distance learning was that there was not face to face interactions and that the site and the course material would be hard to use. These attitudes, however, were not fixed.   Some student's, for instance, adopted a more positive attitude towards technology because the site for distance learning was easy to use and because they no longer had to make a long commute to campus for classes. When some of the students were interacting with technology, their attitudes towards technology had improved because they were using technology more and become comfortable using technology. It is shown that is important for students to develop a positive attitude with the technology that they are using to be able to perform better and have less anxiety. If students have a positive attitude towards technology they will feel more comfortable using it for their classes and therefore will become more tech-savvy the more time they spend using technology. Jaw-Shin Lee et al. also argue that, "advantages in computing and information technology are changing the way people meet and communicate" (2). Many students do not have the same way of meeting someone, most would rather just message someone over a text, or social media site, rather than talking to them in person.

In another study examining students attitudes towards distance education, "Teaching Effectiveness in Technology-Mediated Distance Learning" written by Jane Webster and Peter Hackley, found the researchers who gathered both qualitative and quantitative method as the researchers conducted surveys, participant observation and had the students fill out independent reports. They studied 29 distance courses offered by six different universities in North America. This study looked at distance learning, but suggested that future researchers should also look at "attitudes towards a technology, the perceived usefulness of the technology, and attitudes toward distance learning should be included as important learning outcomes" (1284). This article's findings suggest that students do not feel that distance learning is quite the same as there is less contact between students and professors and that then changes their attitudes towards the technology they have to use then to access their class content. However, at the same time, it was the convenience of distance learning was a big factor that attracted students towards distance learning. Because of this convenience, many students felt that distance learning was helpful. In this article it is stated that "Although students may have positive attitudes towards technology-mediated distance learning, they may also believe that this form of learning is not as beneficial as a conventional classroom setting" (1285). This article also goes on to state that during distance course

> "students seem more detected than they generally do in traditional face-to-face instruction … students from a remote site traveled to be part of the face-to-face class; they felt that the advantages of being at the same location as the instructor outweighed the disadvantaged of the commute" (1297-1298).

Another issue example of a con with technology is that there are other forms of anxieties that students face when it comes to the use of technology. In the article written by M.J. Brosnan titled "The Impact of Computer Anxiety and Self Efficacy upon Performance." In this study, the participants were asked to complete three computer tasks, such as looking and using tables, and

matching data from one table to another. While doing these tasks the participants were timed and their answers were recorded, and the number of right or wrong answers are then compared to the report of anxiety from the beginning of the study that they reported and then looked at their performance. This study looks at the relationship between performance with technology and the anxiety that is felt by these students, suggesting that the more anxiety that is felt, the lower a student's performance is while using technology. The findings of this study states that "computer anxiety directly related to performance, self-efficacy related to how the outcomes were achieved" (230). When it comes to student's attitudes towards technology in classrooms, the key as stated in "Effects of Technology Integration Education on the Attitudes of Teachers and Students" written by Rhonda Christensen is that "with familiarity, anxieties and fears tend to decrease, and confidence increases" (411), and that if a teacher has and expresses technology anxiety in the classroom then students are more likely to experience technology anxiety as well, because "it is critical that teachers possess both positive attitudes and adequate computeriteracy skills to successfully incorporate technology into the classroom" (412). This study interviewed both professors and students about their attitudes about the technology used in their classrooms.

In the article "The relation of gender and background experience to self-reported computing anxieties and Cognitions" written by D. McIlroy states that the background that students have with technology can impacts the level of anxiety they will or can face in university. It is stated in this article that "students attitudes towards computers were significantly affected by previous computer experience and not by gender" (23). If students do not have the same access to the same experiences growing up with technology, then anxiety levels will not be the same for all students. These articles state that the earlier a person is introduced to technology the less likely they are to experience technology anxiety in university. This article and study are

also supported by the study conducted by Jiao Qun titled "Library Anxiety: Characteristics of "At-Risk" college Students". In this study of 493 students at two different universities the findings were that "freshman and sophomore students typically are the most library-anxiety" (7). Students enter into university from all different socioeconomic backgrounds and this then leads to students having unequal access to technologies.

Unequal access to technology

One of the studies that I researched is "Net Generation Students: Agency and Choice and the New Technologies" written by C. Jones and G. Healing. Jones and Healing conducted both qualitative and quantitative methods as the researchers conducted both surveys and interviews. Jones and Healing's study took place over two years in five different universities in England, looking at 14 distance courses. Jones and Healing argued that many students were surprised and confused with the different technology in university which lead to difficulties during the term. Another major finding for this study was that the students were only using the technology that they needed in order to complete the course requirements. In the study it was "suggested that student use of technologies was closely related to course requirements" (350).

According to However, as S. Bennett states in the article "Beyond the 'Digital Native' Debate: Towards a more Nuance Understanding of Students' Technology Experiences", when it comes to technology in "education, it is claimed, as a key arena for radical change" (321). This article research was on surveys conducted by another survey and analysed the data. This article looks at many different factors that suggest that the generation that is in and will be entering university is more "tech-savvy" then the previous generation. This article looks at the fact that for many in this generation, they are immersed into technology at a very early age, but this itself

has many different factors such as the cost of new technologies that are coming on to the market and if the families of these students can afford the newer technology.

However, this article suggests that although these students are more tech-savvy thisat does not prepare them well enough for academics in university. The cost of new technologies that are coming on to the market for instance, brings up the question of whether the families of these students can even afford the newer technology.

Research Questions

The way that I am framing technology as an actant makes a difference to how my research questions were framed and the kinds of research findings I obtained. For instance, unlike Webster who looked at technology as a tool, Waltz looks at technology as a nonhuman actant. In Waltz's examination of the educational technology he found that all the relationships between humans and non-humans affected each other. My research questions are as follows:

1) How do students understand their relationship with educational technology (e.g. actants, tools)?

2) What are some of the positive and negative experiences students have been with the technologies? (E.g. actants or tools)

3) What are the inequalities associated with educational technology (e.g. what are the inequalities that emerge for the student cyborgs?)

Methods

Research Design and Ethics

I conducted interviews with seven students at Grenfell Campus. My interviews were semi-structured, and all identifying information has been kept completely confidential. I have assigned my interviewees pseudonyms and changed all other information. By drawing on interviews that I have conducted with students, I was seeking to give students a platform in which they could

express their experiences and attitudes towards the changed educational landscape and how the

changes have affected their educational experience while studying at Grenfell.

There is a very important power dynamic that I have had to keep in mind while conducting my

interviews. I would not want a professor changing a student's marks or changing the way they

treat the student not only for that semester but also for the rest of the semesters they will be

spending at Grenfell. My interviewees told me about their experiences with different professors

and how they felt about the technology they use to lecture in their classrooms. If a student does

not like a professors methods, and then that professor reads my paper and knows what a student

has said about them, the professor could potentially then alter their final mark of a course or treat

them unfairly in the classroom setting. However not also could a student be placed in a

compromising spot but the professors that get brought up in the interviews could also be placed

in a compromising spot as a student will be talking about their technologies and the way that

they teach in the classroom. Because of this power dynamic I will be keeping all of my

interviewee's identities known only to myself. Confidentiality is very important for the student

as I wanted my interviewees to feel comfortable in talking to me and being able to tell me about

their experiences without having to worry about who will be reading my research paper or any

potential back lash from anyone.

Participants

 I recruited gathered participants through a Facebook post using a purposive sampling method.

Students needed to have some experience with educational technology such as D2L, online

courses, online notes, computers, and projectors through Grenfell Campus. I specifically selected

student cyborgs for my research. These students all have different areas of study such as

social/cultural studies, psychology, math, environmental science, and French. All my informants

were undergraduate university students from Grenfell campus who have had similar experience with learning assistance technology but they had different access to technology. My informants were from all different socioeconomic backgrounds and therefore they all grew up with different technologies in their house hold therefore they all had different access when they came to university in the different technologies that they could own because of what they could afford.

I focused on the background with technology (such as growing up, into school, and high school) and then on their attitudes and experience with technology as well as their attitudes. I was specifically interested, however, in student's negative experience with technology.

Measurement

The following is an overview of the topics covered in the interview along with some sample questions:

1) Demographics

E.g. What are the occupations of our parents? What Program of study are you currently accomplishing your degree in?

2) Experience with educational technology at and prior to university (e.g. home and high school.)

E.g. What learning assistance technology did you have access to before coming to university? What was your perspective on educational technology before university? What learning assistance technology have you used since coming to university? Has your use of this technology changed since entering university? Have you learned how to use technology differently since you became a university student?

3) Perspectives on educational technology

E.g. What is your perspective on educational technology since coming to university? How has your perspective on this technology changed? What technology do your professor's use in the classroom? What technology do you use in the classroom? How do you feel the technology impacts your relationships (e.g. with professors, other students and overall experience)?

Findings

In my research, there have been an emergence of four major themes emerged. These themes are the advantages of using certain technology, the disadvantages of using technology, the newly emerging forms of inequality and technology as "actant" not a "tool".

Advantages of having technology in university

All my participants in my research said that they all felt that there are two benefits associated with is two advantages in educational to technology. The first benefit my participants mentioned was the use of emails. Emails act as a mediator between students and professors. Students and professors can contact each other without having to wait for a good time to go to their office or set up meetings. Emails are a great way for first year students in particular to work up the nerve to go talk to their professors face to face while some professors would rather everything emailed to them for ease of access and convenience.

> Fembot: " I email some of them (professors) before I approach them in class like I use to email one before I worked up the nerve to go talk to him in person because he is kind of intimating at first it kind of it's like an intermediary that lets you go from a to b".

 For first year students their professors can be very intimidating and therefore the students may feel better emailing a professor before they work up the nerve to come see confront them outside of class.

Another benefit of educational technology according to my participants second advantage that came from my informants was the convenience of having a laptop or a tablet. Half of my participants took their laptop or tablet to class to take notes. For half of my informants, having their computers in class was faster and easier when it came to taking notes. Also, with a laptop or a tablet they were able to connect to Wi-Fi anywhere and therefore they can write papers or stay in contact with other people from anywhere where ever they are on campus.

Robotrix: "my computer comes to school with me every day so I can contact people and research and do homework and papers where ever I am … so in order to stay on top of my things I need to have my computer on me at all times".

However, many students also use their cell phones in class for convenience. F, for example, one of my informants, Cable, while talking about using her phone in class, told me that:

Cable: "It can be a really good help with stuff that you don't know and stuff like that if a Prof mentions something in class that I don't know I can look it up or even just make a note of it in my phone to look up later".

Most of my participants agreed that having the ability being able to look up things up just at their fingertips is a convenience that they enjoyed. Many students like, that they are able to look something up without having to interrupt the whole class to ask one question.

When I asked my informants about their attitudes concerning technology and their professors attitudes towards technology that was used in class, they were both positive. This result is the same that was found in the article "Perils and Promises: University Instructors' Integration of Technology in Classroom-based Practices" as the findings in this study were that if the professors have a positive attitude towards the technology they are using the students will also have more positive experiences and attitudes with those technologies.

Disadvantages for using technology in university

However, where there are benefits are also potential consequences. For some students one of the major problems with the new educational technology is that it is distracting. One of my informants Cable was talking to me about cell phones being used in class and stated that

Cable: "it can be a bad thing especially around March when everyone is starting to get distracted I feel like there is more texting then anything".

The last of the term for students is very busy and their cell phones can easily become a distraction from school work. At the end of the term many students are thinking about all the

work left to do, but also that it is almost over, and many students are thinking about going home

for the whole summer.

The second disadvantage that came up during my interviews was that when students are

using D2L (distance learning) there is a barrier between students and professors. While talking

about D2L Robocop stated

> Robocop: "I originally took two courses over the internet through D2L and I fucking
> hated it so I dropped one of them … online it was horrible … I dropped it as soon as I
> saw it" (Robocop) And then when asked what the reasons were why they did not like D2l
> my informant responded "It's cold its stiff there is no communication its glitchy as shit, a
> lot of profs can't use it the prof I had he had no idea how to use it … there is no quality
> with D2L you don't get interplay".

Such barriers are a disadvantage to students as they contribute to their have negative

experiences with D2L and are less likely to use it again unless they need to. They also are less

likely to recommend it to other students. While D2L may work for them, all my informants said

that they would rather take a class with a professor. The primary reason given by my participants

was because online courses do not have face to face communication. With D2L, students have to

rely on technology working for every aspect of their course and for communication with the

professor. When having to rely just on technology, communication can be hard, as things can get

misunderstood with just the text, and also it is hard to build relationships over emails throughout

the duration of the term.

Another issue with technology that came ip in my interviews was that there are anxieties

with technology use. Different aspects of technology affect students differently. Astro Girl told

me that

> Astro Girl: "There are just some questions that are answered better in person then over
> email, people are too dependent on technology they ask their profs these questions and
> expect to get this big reply's back that can't really be given through emails and stuff".

Many students rely too heavily on technology and expect their professors to teach through emails

if they miss a class. Another informant told me that they believed that technology has changed

student's interactions with each other differently, along with professor and student interactions.

My informant Fembot told me that they,

> Fembot:" kinda find that technology is made our … interactions with people that we are not close with different … for people we don't really know I don't think we have that same mentality to go up and shake their hands and introduce ourselves and talk to them its more oh ill Facebook them after because it becomes awkward to talk to people that you are not close with and the same kinda thing happens with professors".

Many students will message others on Facebook for notes they missed or to set up times for

group projects instead of meeting face to face beforehand. Students and many other people have

more confidence using a mediator like Facebook for email for initial communication.

Unequal access

The third major finding that emerged out of my interviews was that there is unequal access to

technology. While technology has the potential to equalize educational access by making it

available online, technology is also more easily accessible to more advantaged groups. While

growing up some of my participants grew up with technology while others only had limited

access. Different access then impacts the way students see themselves, such as tech-savvy. For

example, one of my informants who was from a well off family told me that

> Robocop: "I do not feel disadvantaged because I can afford the technology that I need, I just ask mom because I am lucky enough to be able to get it so to me no but I can see how some people are disadvantaged by that".

 That same informant then continued to tell me about a friend that is going to apply for school in

the fall and how this unequal access was something that they were really worried about. My

informant told me that,

Robocop: "I have a friend who is applying to first year University and she really doesn't have a whole lot of money or a big support system she's really worried because she doesn't have a computer and she is really stressed out about that".

The friend of my informant is really worried about not having a personal computer, and even though there are computers available at the school for students to use there are limitations such as time and space when using the school computers.

Another one of my informants was talking to me about how her computer crashed and that she was forced to use the computers at school which was frustrating. However she told me that she had to

Astro Girl: "choose between a computer and only eating Kraft dinner the rest of the term or eating well and not having a computer".

For this informant, she wanted a new computer because it was easier for her to get papers done as the papers could be written at her home rather than just at the school library which allows her to work much later then the library is open for. To have this privilege she would have to pick between "real" food and a computer. Even though this informant was on a student loan, they were not able to afford fruits and vegetables and a computer in the same term, so this informant chose eating well over a computer even though she admitted it was a hard choice for her to make. Because this informant was from a small out port town, and they were from what can be considered a less economically advantaged group they were not able to just call their parents and get a new computer like my informant Robocop was able to do. Students from different economic backgrounds have different access to the types of technology that they can afford, and therefore the knowledge that they have about different technologies is then also different among students. Not all students have the same kind of access to technology. As such, "student cyborgs" are themselves visibly "classed".

For example, a student with more economic capital can afford the newer, brand-named, top of the line, "cooler" technology. Think about the cyborg that is created through the use of a HP computer and then think of the cyborg that is created through the use of a Mac computer. These two different cyborgs have a different knowledge about the technology they are using because these two different programs are very different from one another.

Technology as "actant" or "tool"

All my informants besides one thought of the technology they were using as a tool. However, when I asked them to explain how they use their technology and how they interacted with them daily, it was clear that their descriptions of this "tool" was that in fact it was an actant in their daily lives.

> Cable: I never leave home without my cellphone or laptop. It's a connection thing I guess… I have to be connected to people at all times

One of my informants then when on to state that they believed we were student cyborgs and stated that

> Robocop: "we are student cyborgs, we should be using technology… as I said when it dominates the system you can't really control it anymore. It just takes off and goes and goes and goes that's what it's kinda like"

Both of these informants described technology as an actant however one could only think about it as a tool that was used in their daily lives, which it had to real effect on them. As one of my informants told me, they would go back to their home just to get their computer or their phone if they forgot it because they could not get through the day without it. For some students they do not even leave home without their nonhuman counterpart

Discussion

In my findings the four different themes that emerged are largely congruent with the literature and theoretical framework I have read. Nonhumans such as smart phones and computers allow

students to stay connected with either their families back home or with other students or professors on or off campus. However, as one of my informants stated, such non humans can also be a very large distraction for students as the pressure throughout the term increases. All my informants told me that they never leave their room or their house without their technology which include either their computers or smart phones. This indicates a symmetrical relationship in which computers and smartphones are not just tools but actants who act on us. This is why Latour's theory of the collective is so relevant to any analysis of educational technology; students don't just use technology they live in a collective of which they are a part.

However, Latour did not explore that different people have different access to nonhumans which leads to student cyborgs being visibly classed. Latour does argues that meaning is articulated differently depending on the actant with which we are interacting. For example, the type of smart phone or computer that a student owns is different and is based on what they can afford. Because certain brand name computers and smart phones are more expensive than others, they are only more available to more advantaged groups. The type of computer or smart phone that a student is interacting with changes the type of intentions they have which then changes the type of "student cyborg" that they can become. Consequently, the class difference can be seen very easily as the brands can be easily differentiated from one another. This is an issue of unequal access to technology in society, in which more advantaged groups have more access to different things that have more symbolic value. And although technology may be said to equalize educational access in some ways, I have found that the inequality is reproduced in the educational collective. ..

My informants from smaller towns and more rural areas told me that they learned how to use a computer at home by themselves because they did not really use them in school until they were

in high school, whereas the people that grew up in larger towns or in well off families, they had an earlier experience with technology and a wider variety growing up and therefore consider themselves to be tech-savvy. As mentioned before, one of my informants had to choose between eating real food or cheap processed food when it came to thinking about a new computer after theirs had crashed because they were on student loans which is a fixed amount of money. Unlike my other informant who mentioned that they could just call their mom and she would come to town and buy them a new computer within a couple of days. Haragittai states that

> "By the beginning of the twenty-first century, information and communication technologies (ICT) had become a staple in many people's everyday lives … With economies increasingly dependent on knowledge-intensive activities, the unequal distribution of knowledge and information access across the population may be linked increasingly to stratification" (936).

Technology is a staple in human lives, as Haragittai states. However, there is an unequal distribution of what technology different groups of people can afford.. Students are not all the same, the kinds of technologies that they interact with will be different according to what they can afford and have access to. There are then potentially different types of student cyborgs which are potentially classed.

As Bennett argues, the access to technology varies according to socioeconomic backgrounds which affects the knowledge and access to information for students. Access to different technology affects students in terms of becoming aware of the programs and information that they need to have based on how much access they had before coming to university. Not all students enter into university with the same knowledge of technology or the same access.

One of the studies I have read, "Using Texting to Support Students' Transition to University" mentioned that if first year university students were able to use their phones to talk

to their professors rather than just by email there would be less anxiety for them. This is because students that are entering university have become so reliant on texting each other as their primary form of communication, that going to talk to a professor can be very intimidating. And first year students have to learn how to use the email systems that are set up for them when they enter Grenfell. Learning to use the email system can be difficult at first, however, once students have used it a few times it becomes easy to use and they can even link their Grenfell email accounts to their phones so it is more like a text message for them. And as some of my informants stated, they use their phones in class to look things up that their professors are mentioning in class that they do not understand. Students are looking things up either because they do not know or understand what is being talked about, or because they want more information so they are able to make more intelligent questions to help them understand the topic. Students have their phones with them to keep in contact with people or to look things up in class is a convenience as all my informants mentioned.

Technologies biggest draw for students is the convenience, either for home access of the library or class material, to writing papers neater and faster, or to being able to find the answers to their questions at their fingertips. Emails are very similar to texting for students and there are ways to have emails forwarded to their cell phones and appear as text messages. Therefore once students can navigate their Grenfell email accounts to them it is just as convenience as texting. Distance learning or D2L came up in every interview I conducted and there were two different reactions. One reaction was that some of my informants loved D2L because it allowed them to do their work at their own pace and from their own home. However, the other reaction was the opposite and that they hated it. As stated above, my informant described D2L as

> Robocop: "its cold its stiff there is no communication its glitchy as shit, a lot of profs cant use it the prof I had he had no idea how to use it … there is no quality with D2L you don't get interplay".

For Robocop, they did not like that there was no human contact and that it was so cold and there was no feedback or interplay with other students. This observation of Robocop has a similar outcome of the study in the article "The Influence of Technology Anxiety on Consumer Use and Experiences with Self-service Technologies", as that study found in 2003 that more anxieties were expressed when the face to face communication was taken away. Although, technology and university institutions are moving forward with technology changes, and the educational landscape has changed, all of my informants still preferred going to classes with their professors over distance courses without having that face to face communication and as one informant told me, when taking distance course it is out of site and out of mind and they often forget about it because there is no real daily commitment with D2L like there is when having to attend a class on campus.

In studies that I have read, there is a large amount who observed different anxieties that students face when using technology (such as anxieties of interacting with technology when there is no face to face communication such as when using D2L). All of the participants in my research expressed some type of an anxiety when it came to technology. For example, two of my informants use Mac Book computers and said that if their computer ever broke they would not know how to go back to using a windows computer and therefore they make sure to take extra care of their computer. Another example of anxiety can be seen when my informants told me about having to learn how to use different programs for different courses that they have never used before, these students told me that the programs are not the easiest to learn and that they needed a lot of practice with them before they felt comfortable using them. However, new

anxieties that came up in my interviews were not in any of the literature that I had looked at. Such as some of my informants told me that she felt that technology has changed face to face communication more awkward as they would rather message other people online than have to talk to them face to face.

Conclusion

For the students that I interviewed, each had a different attitude towards technology and how and when it should be used. After talking to my informants about the use and their relationships with their technology it can be seen that they are in relationships with their nonhuman counterparts and therefor live in a collective. My informants told me that they could not leave home without their technologies therefore they are not just tools they that interact with. Rather the technology that students engage with on a daily bases is an actant that affects their interactions. Not all student cyborgs are the same as they enter into the relationship with nonhumans with different knowledge and with different kinds depending on what is available to them. While looking at an educational collective, which involves technology and the emergence of student cyborgs, we also have to engage with the newly emerging forms of inequality. The student cyborg has emerged out of a student's interactions with nonhumans such as smart phones and computers. Latour theorizes that a new kind of agent emerges from our interactions with these technologies. It can be seen that student cyborgs are created, in the lines of the "collective – defined as an exchange of human and non-human properties". The cyborgs in this case are created through that same exchange of properties. Latour's theory can be seen as relevant and for some students, they see technology as an acant, as my informant Robocop said

> Robocop: "we are student cyborgs, we should be using technology… as I said when it dominates the system you can't really control it anymore. It just takes off and goes and goes and goes that's what it's kinda like".

The student cyborg has officially arrived!

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