Watching Our Children Electronically:

A (Post)phenomenology of Classroom Management Software in Schools

by

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Abstract

This postphenomenological study is a timely investigation into the hidden curriculum of surveillance technology in schools. Drawing on literature from the fields of Surveillance Studies, Education, and Philosophy of Technology the purpose of this inquiry is to expose the hidden curricula of electronic surveillance technology in schools and to bring to light the new ethical demands and responsibilities that come with it. In the unveiling of surveillance technology's hidden curricula the intent is not to draw attention to the technology itself, but rather the world which is convened through the technology. This study is also concerned with uncovering the beliefs and values that are built into surveillance technology and examining what this says about the about the purpose of education, the role of the teacher in the classroom, and the shape and significance of tomorrow's learning environments for students. As such this work challenges the inherent values of the instrumental mindset which are displacing a pedagogical and moral orientation by prioritizing the values of control, efficiency, and conformity over other important values such as care, trust, autonomy, and critical thinking.

Drawing on the phenomenological research methods of Max van Manen's (2014) "phenomenology of practice" and Adams and Turville's "postphenomenology of practice" (forthcoming 2018) this study is predominately based on the analysis of hermeneutic phenomenological interviews of teachers and students who have experienced and used classroom management software. By attending to the peculiarities of human-(surveillance)technology-world relations and the amplification and reduction structures that come with it, this study draws attention to the many ways in which surveillance technology may alter the ways in which we perceive and engage with the world. This includes the ways in

which the relational, situational, and affective dimensions of pedagogy are altered every time a teacher solves a problem by grabbing for a mouse rather than directly dealing with the conflict or problem at hand. In this way this study reveals how surveillance technology not only shapes how teachers and students perceive and interact with the world, it also has the potential to shape a teacher's way of being in the classroom.

This study is important not only because it raises important questions about how and why surveillance technology is used to watch over youth; it is also important for bringing both Philosophy of Technology and Surveillance Studies research into the field of education. This inquiry is a departure from the traditional concerns of the field of educational technology in that it offers new and critical perspectives on the numerous unintended consequences of using surveillance technology to watch over youth. Importantly this study draws attention to the many unexpected ways in which these tools silently but forcefully form inclinations within which new dominant pedagogical practices and routines emerge. The intent is not the abandonment of these tools, but rather to consider the ways in which we can live with these tools in ways that minimize the negative impact of the unintended consequences of these tools. By alerting teachers to the ways in which surveillance technology selectively extends and constrains what teachers see of their students, this may provoke a deeper understanding of how everyday interactions with surveillance technology may shape and alter the pedagogical choices made by teachers in the classroom. Most importantly, this inquiry calls on us to reconsider how and why we use surveillance technology to watch over youth and to reflect upon our ethical priorities to ensure that it is the care of the child that is at the center of surveillance practices.

Preface

This thesis is an original work by Tracy Boger. The research projects, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board: Project Name: “Teacher's Experiences with Classroom Management Software: The Pedagogical Implications of Monitoring Students Electronically”, No. Pro00034724, 2/21/2013; and Project Name: “Student Experiences With Classroom Management Software: The Pedagogical Implications of Being Monitored Electronically”, No. Pro00034725, 2/21/2013;

Dedication

This work is dedicated to my parents for their unconditional love and encouragement and to my children for making me stronger, better, and more fulfilled than I could have ever imagined. I love you more than words can say.

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Table of Contents

Abstract ..... **ii**
Preface ..... **iv**
Dedication ..... **v**
Acknowledgments ..... **vi**
Table of Contents ..... **vii**

Chapter 1: Introduction **1**
Opening Up the Question 1
Situating Myself 8
Situating the Question 11
Research Question 16
Approaches to an Ethics of Technology 19
Summary 24

Chapter 2: Literature Review **27**
Introduction 27
Surveillance Studies: Defining Surveillance. 28
A Brief Overview of the History of Surveillance Technology 30
Theorizing Surveillance: Foucault and Panopticism 31
Theorizing Surveillance: Post-Panopticism 35
The Ethics of Surveillance Technology 38
The Electronic Ssurveillance of Students and Youth 49
Video Surveillance Technology in Schools 56
Surveillance of Youth on Digital Devices 61
Internet Filtering and Monitoring Software 62
Classroom Management Software 65
Tracking Tools in LMS 67
Radio Frequency Identification (RFID) Systems 69
GPS Tracking 71
Biometric Surveillance 72
Social Media Monitoring Software 75

Chapter 3: Methodology 79
Theoretical Framework 79
Phenomenology in a Posthuman World 80
Phenomenology 82
Postphenomenology 83
Ihde's human-technology-world relations 85
Embodiment Relations 86
Hermeneutic Relations 87
Alterity Relations 88
Background Relations 88
Human-Technology-World Relations Summary 89
A Postphenomenology of Practice 90
Research Participants 93
Data Collection: Gathering Lived Experiences Descriptions 94
Phenomenological Analysis and Reflection 96
Epoché and Reduction 98
Summary 102

Chapter 4: Teaching at Distance in the Same Room 106
Bringing the Distance into View 106
The difference classroom management software may make 109
The Look 121
The panoptic "Look": always being under surveillance 125
Bodies Lost on the Sidelines 130
The Cyborgian Shoulder Tap 136

Chapter 5: Unveiling Our Taken-for-Granted Technological Attitude 151
Assumption 1: Surveillance technology is necessary to keep children safe. 156
Assumption 2: Surveillance in schools is the same as other public spheres 166
Assumption 3: Surveillance in schools is necessary to help youth make the right choices 173
Assumption 4: School surveillance systems simply automate existing processes 177
Assumption 5: Surveillance improves learning because it increases time on task 181

Assumption 6: If you have nothing to hide to you have nothing to fear. 186
Final thoughts: Control verses Care 193

Chapter 6: Conclusion 200
The Future Surveillance Classroom 210

References 218

Appendix 243
Teacher Recruitment materials for listserve and electronic distribution 243
Invitation Letter for Teacher Participants 245
Informed Consent Form for Teachers 247
Sample Teacher Interview Questions and Written Response Prompts 252
Student Recruitment materials for listserve and webpage distribution 253
Informed Consent for Student Participants 255
Sample Student Interview Questions and Written Response Prompts 259

Chapter 1: Introduction

Opening Up the Question

There is no escaping it. Surveillance technology is everywhere, including our public streets, public transit systems, shopping centres, hospitals, homes, and schools. No one is immune, and arguably no one is watched more closely than children and young people. At birth fingerprints, footprints, blood samples, and mouth swabs containing DNA are collected. In infancy and beyond, youth are watched through video baby monitors, nanny cams, Internet-enabled surveillance in daycares, and CCTV cameras. As children grow older and more autonomous the monitoring not only continues, but can intensify. Youth are tracked through GPS (Global Positioning Devices), RFID (Radio Frequency Identification) enabled clothing or ID tags, Internet filtering and monitoring software, cell phones, home drug and semen tests, spyware, and biometric security devices that are based on iris recognition, fingerprints, palm scans, and even facial recognition (Marx & Steeves, 2010). This is not the stuff of science fiction or spy novels, these technologies are now easily accessible and are increasingly being used to keep track of our youth. Indeed, "schools are perhaps the most significant consumers of surveillance technologies, and not just on account of their demonstrable appetite" (Taylor, 2013, p. 12).

The extent that school children, as young as four years old, are being watched is quite astonishing. In response to a recent push for increased efficiency and security, many schools are adopting RFID systems and biometric technologies such as fingerprint, palm, and iris scanning equipment (Schropp, 2016). A RFID system consists of a microchip, reader(s), and database. In a school-based RFID system, the microchip is typically embedded in an ID badge, or sewn into a backpack or school uniform. Whatever the case, the microchip is

expected to be with the student at all times. Electronic readers can then scan the RFID chip passively (whereby the chip is intentionally placed over a reader) or actively (when the chip is constantly being scanned and provides real-time information). The database saves information that is collected from the RFID microchip including location, movements, and personal information such as name, photo, and other biometric indicators. In many cases, these systems automatically notify parents by email or SMS text message when their child is absent or late for school. For example, in the north-eastern city of Vitoria da Conquista, Brazil, when a pupil passes through sensors at the school entrance, the chip sends an SMS message to parents (BBC News, 2012). These systems have been used in Brazil (BBC news, 2012), the UK, Japan, South Korea, and the US including the states of New York, California, Texas, Arizona (Ema & Yuko, 2011), and New Jersey (Schropp, 2016).

In some cases, RFID systems have been introduced to generate revenue through the reduction of truancy (Hadlock, 2012, BBC News, 2012). In Texas for example, public school funding is often tied to the daily attendance of students. When RFID systems were adopted by the Northside Independent School District of San Antonio, they received about $30 per day in state funding for each student reported present (Hadlock, 2012). It had been estimated that underreported attendance cost the school district about $1.7 million and that the RFID system would pay for itself in the first year (Hadlock, 2012). This raises important questions about why surveillance technology is being implemented in schools in the first place. Is it really the safety and the best interest of students that is driving these decisions? Most would agree that schools should strive for the fullest possible development of each child. We want our children to grow into moral, creative, free thinking, and productive members of society. But the adoption of RDIF systems seem to have very little to do with these goals. While these

imposed accountability measures are intended to enhance education, in actuality they appear to skew and obscure educational goals.

The motivation for the introducing RFID systems into schools is just one of the many ethical tensions that surface with the introduction of this technology. The fact that these tools have the power to track the whereabouts of every single student in the entire school at the click of button raises other ethical concerns.“What kind of lesson does it teach our children if they’re chipped like cattle and their every movement tracked? It doesn’t create the kind of independent, autonomous people that we want in our democratic society” (Simpson, 2014, para. 11). As new forms of surveillance technology enter our schools, it is important to recognize that with these new tools come new demands, responsibilities, and ethical considerations. The introduction of surveillance technology is not just about security and privacy. Limiting discourse to the security-privacy debate and the economic case for introducing this technology, distracts us from other critical ethical questions that need to be asked. We need to consider not only the motives of introducing these tools, but also the unintended consequences of electronically watching over youth in this way.

Another type of surveillance technology that has made its way into schools in the name of efficiency and security is biometrics. Biometric data is unique personal information about an individual’s physical or behavioral characteristics that can be used to identify a person. Examples of biometrics that are used in schools include fingerprints, retina and iris patterns, and hand measurements. In the UK and US, fingerprints and palm scans are used to track and record attendance, to check books out of the library, and to purchase meals in school cafeterias (Marx, 2016). One school in Scotland is reported to require students to scan their palms to gain access to toilet facilities (Doyle, 2010). In the US, portable iris scanners

resembling a pair of binoculars are increasingly being used on school busses (Hennick, 2013; Schropp, 2016). A student simply looks into the device then the system notifies both the student and driver whether the student is on the correct bus. According to the Big Brother Watch report, *Biometric in Schools* (2014), an estimated 40% of schools in England are using biometric technology, with more than 866,000 children who were fingerprinted in the academic school year 2012- 2013 alone.

Increased efficiency has been cited as one of the main reasons for introducing biometrics in schools. Student ID cards can be lost, lunch money can be stolen, and biometric technology seems to solve these problems. Yet, asking students to keep track of a student ID card is not an unreasonable expectation. One important outcome of schooling is to teach children responsibility and to learn that there are consequences for actions. By easing the burden of this simple responsibility important learning opportunities are lost. Admittedly there are many ways to teach responsibility, but I can't help but wonder whether the problem of lost ID cards is something that necessarily requires a technical solution. This is especially the case considering biometric surveillance practices raise unique ethical questions regarding bodily integrity and ownership. Not to mention that, at this rate of growth, within a generation the entire population of England could very well have their biometric identities captured in an electronic in databases, just sitting there, waiting to be used.

These practices represent a shift from human-centered strategies of watching over our children to a new kind of electronic watching, which brings new narratives of risk, fear, control, and mistrust. This is not to be taken lightly because schools are not like other public institutions. When surveillance technology becomes as commonplace and mundane as the whiteboard, surveillance practices become ordinary, expected and even natural (Taylor,

2013, p.11). Furthermore, unlike adults who experience surveillance technology in other public places, children are legally required to attend school. They have no choice in the matter. In this way, children are very much at the mercy of adults who 'know better' and are presumably looking out for their best interest. For this very reason, it is especially important that children's experiences with surveillance technology in schools be examined, documented, and understood.

In general, discussions about the use of surveillance technology in schools tend to evoke polarized reactions. On one side there are those who are horrified at the thought of schools becoming transformed into invasive no privacy zones, driven by unforgiving surveillance technologies that are capable of watching a child's every move. On other side there are those who embrace surveillance technology and assert that it makes our children more safe and secure. Ironically, this narrow emphasis on safety leads to two contradictory views:

> the child is a victim who must be placed under surveillance for protection; and the child is an anti-social threat who must be placed under surveillance to protect society. From either perspective, the richness of the child's lived experience is lost. (Steeves & Jones, 2010, p. 189)

This begs the question: exactly what aspect of the child's lived experience is lost when surveillance technologies permeate our schools? Don Ihde (1979, 1990) suggests that when technology amplifies one dimension of the human experience, it necessarily reduces others. In other words, technology selectively augments certain aspects of experience and diminishes others. The use of surveillance technology in schools is not just a matter of protection, safety, and privacy, there are many unanswered questions regarding the manner in which these tools

support, inform, and transform both human experience and pedagogical practice. In order to understand this transformative aspect of technology, it is helpful to turn to the lived experiences of students and teachers who already use surveillance technology in schools.

Our everyday interactions with surveillance technology can tell us a great deal about how technology shapes our lived experiences and perceptions of the world. Reflecting on the changing technology environments in education, Adams (2012) recounts the following moment:

> Books in hand, I walk through the library security gate, suffering a fleeting but familiar Pavlovian body cringe fearing that the alarm might go off even though I had scanned all my books. Like exiting a department store (or airport security) these days, I cannot help the surge of irrational guilt that wells up as I pass through the security threshold, as if I too believe I should be scanned for possible criminal intent. Walking through the library exit, my innocence is declared dispassionately by the machine's silence, and barely registers as a sigh of relief. (p. 263)

It is amazing how something as simple as a library security gate has the power to make an innocent library patron feel suspect. While we know that the surge of guilt that may sweep over us is irrational, somehow the security gate tells us something very different. The security gate directly addresses our pre-reflective embodied selves, reminding us that we are not alone, and that we are being watched. The judgmental gaze of the machine takes ahold of us, and does not let go until the silent declaration of innocence brings relief. This is not a matter of a machine shaping our world, rather it is a matter of the machine shaping us.

In its design and function surveillance technology in schools is not neutral. Surveillance technology is designed for a very specific purpose, to influence the behavior of

those being watched. Security gates in libraries may function to ensure materials and books do not leave the premises without being checked out, but they also have other effects. As Ellul (1990) cautions,

> Technique carries with it its own effects quite apart from how it is used... No matter how it is used, it has of itself a number of positive and negative consequences. This is not just a matter of intention. (p. 35)

The familiar Pavlovian body cringe that some of us may experience when walking through a security gate is just one of the many side-effects of surveillance technology. While this side-effect may be relatively benign, it should give us pause to wonder how other forms of surveillance technology might be quietly shaping and informing the way our youth perceive and experience their world.

Undoubtedly surveillance technology shapes the behavior and actions of teachers and students, which may have important ramifications for both education and society as whole. The unexpected and unintended ways in surveillance technology addresses teachers and students can be considered the hidden curricula of surveillance technology. Indeed, the "responsive architectures of digital media are our new *hidden curricula*, imperceptibly yet nonetheless thoroughly re- mediating our perceptions and gestures – our performativity – and are thereby re-schooling both adults and children in new modalities of knowing, perceiving and acting." (Adams, 2012, p. 263). The hidden curricula of surveillance technology raises many important questions such as: What message does surveillance technology send to students? How does surveillance technology shape both teaching practices and learning environments? How does knowing that every move and keystroke is being watched (and possibly recorded) shape a student's experience in the classroom? Accordingly, the intent of

this inquiry is to look beyond the original purposes of surveillance technology in schools, and to explore the hidden curricula of surveillance technology.

Situating Myself

There is absolutely no denying that being a student in the Department of Secondary Education has significantly changed the way I view the world. Coming from the Educational Psychology Department where I completed my Master of Education in Instructional Technology, I entered my doctoral program with many preconceptions about what constituted meaningful and valuable educational research. My view of the world was very much entrenched in what Habermas (1984) would call instrumental rationality. This line of reasoning is calculated, driven by efficiency, and tends to reduce relationships to those means and ends. I now appreciate that an array of discourses need to be recognized, understood, and explicated in order to fully understand what it means to teach, learn, and live with technology. As a result, I have come to be somewhat critical of the Field of Instructional Technology because of its sometimes reductionist view and the manner in which it overemphasizes technical, rational, and practical ideologies.

Given my instrumental rational view of the world when I entered my doctoral program, it is not surprising that my initial goal was to come to understand how to improve and enhance teaching and learning with technology. After being introduced to the work of Aoki (2005) and Adams (2008), I came to realize that my means-ends interpretation was short sighted and did not reflect upon on the value of the end. I also recognized that, my quest to find a magic formula to increase exam scores did not really align with my personal philosophy of education.Concerns of efficiency and academic achievement should not be the only driving force behind pedagogical decisions, especially if it means compromising the

social and relational aspects of teaching. The true value of education comes from the promotion of human understanding and improvement of the human condition, which cannot necessarily be measured on an exam. In many ways my decision to select the topic of surveillance technology in schools represents a retreat back to the real reason why I went into education in the first place. Although, I am still very interested in how technology influences teaching and learning, my interest no longer lies in how it can be used to "enhance" or "improve" learning in a specific subject area. While this is important, I believe there are more important questions that need to be addressed.

Upon becoming disillusioned with the instrumental rational view of technology in education, I embraced the field of Philosophy of Technology, which is in part dedicated to studying the nature of technology and its unintended effects. As I continued on this path I began to realize that we cannot merely "use" technology without also, to some extent, being influenced or "used by" it. This realization in turn led me to reflect upon my own teaching experiences with technology and to consider the ways in which technology has shaped my own teaching practices. I came to ponder the many ways in which technology informed the choices I made in my own classroom. I came to realize that tools like Pointpoint, interactive white boards, and learning management systems (LMS) such as Moodle are not simply tools that enable alternative ways to deliver a lesson. Rather these tools forcefully shaped, altered, and informed many of the pedagogical choices that I made in my classroom.

Ultimately the thing that drew me to the topic of surveillance technology is my experience monitoring student activities using classroom management software (CMS). This software allows teacher's full access to and control of students' computers through a console which shows a thumbnail of every student's computer screen. At any time a teacher can click

on a thumbnail to enlarge it and view what a student is doing in real time. If necessary the teacher can then take full control of the student computer. It even permits teachers to go back in time and track students' past activities. When I first started using classroom management software in my computer lab I absolutely loved it. The increased reach of the software opened up new ways to watch over students, enabling me to peer into my students' world without even having to leave my desk. I now realize that this software also led me to watch over my classroom in certain prescribed way. Even before I entered the classroom the terms of engagement for using classroom management software *required* me to monitor students from the distance of my computer station. This was in stark contrast to managing student behavior by walking around the room as I did in the past. In this way the classroom management software silently but forcefully formed inclinations within which new dominant practices and routines emerged. This realization made me wonder in what other ways classroom management software might call teachers into action. Equally important, I wondered how these new pedagogical practices and routines might shape the experiences of students in the classroom.

I never really thought of classroom management software as a form of surveillance technology until very recently when I encountered the field of Surveillance Studies. Within this field, surveillance is not limited to the surreptitious watching and documentation of the activities of suspicious persons. It involves "the collection and analysis of information about populations in order to govern their activities" and is considered a "general tool used to accomplish any number of institutional goals" (Haggerty & Ericson, 2006, p. 3). Framing classroom management software as surveillance technology surfaces a host of ethical issues. For example, what does classroom management software in schools say about the purpose of

education? What type of future society will we have if an entire generation is educated in an environment where their every action is monitored? What about privacy considerations, legal rights, and student autonomy? Admittedly these questions may be too big to completely address in this dissertation, but these are certainly the questions that inspired me to examine surveillance technology in schools on a deeper level. As I dug deeper, it soon became apparent that this is something I could be passionate about and equally important, the topic is an important issue that has gone virtually unexamined in Canada.

Situating the Question

The moment when a student realizes that the computer he is studying with, has in fact been studying him, can leave a very lasting impression.

> *Over the lunch hour, a fourteen-year old boy and his friends are gathered around a computer in the library, when suddenly the screen flashes and a giant eye fills the screen. Looking around, the teens notice that all the other screens also display the same large, imposing image of the human eye. One of the children in the group mentions that his last school had the same software and the eye is a warning that the librarian is watching them from her computer desk. The group returns to work on their project but for some reason the image of the all-encompassing eye stays with the boy. He leaves the library feeling "creeped out" wondering to what extent he is being watched at school.* [1]

[1] All text that appears in block quote italics are anecdotes that were collected during my research projects *"Teacher's Experiences with Classroom Management Software: The Pedagogical Implications of Monitoring Students Electronically"* and *"Student Experiences With Classroom Management Software: The Pedagogical Implications of Being Monitored Electronically"*

The school library is using NetOp Vision, one of several classroom monitoring software programs designed to allow teachers full access to and control of student computers through a teacher console. Whenever the software is activated a large eye is displayed on students' computer screens to warn them that they are being watched. Reminiscent of the telescreens in George Orwell's novel 1984, the software and the image of the large imposing eye are designed to send students the Orwellian message "we are watching you!".

Clearly this fourteen year old is not accustomed to being watched in this way at school. Yet, other public places such as shopping malls, banks, and grocery stores all have various forms of electronic surveillance. So why would electronic surveillance in a school be any different? Advocates of classroom management software like NetOp Vision might say that the image of the eye is nothing more than a "fair warning" to students, reminding them that if they choose to break the rules they will be caught. They might claim that this it is no different than signage on a roadway that warns motorists of photo-radar. But a school is a very different place than a busy roadway. A school is a place of growth and learning. It is a place where students should feel free to learn from their mistakes. A busy roadway on the other hand, is not a place to learn by trial and error because people's lives are literally on the line. Furthermore, the role of the teacher is very different than that of a law enforcement officer. Although both teachers and law enforcement officers enforce rules, teachers have multiple roles in the school. Teachers are caregivers, nurses, coaches, cheerleaders, and even confidants. They provide encouragement, inspiration, and support to students in need. Elementary school teachers in particular watch over students in a pedagogically caring way. Law enforcement officers, in contrast, are responsible for enforcing rules with the general public's interest at heart and are less concerned with shaping the minds and hearts of

individuals who make infractions to the law. When viewed in this light, it is clear that watching over youth in schools is very different than surveillance in other public places.

At the same time, supervision in the form of a teacher watching over a group of students who share the same physical space, is not only universally accepted, it is an absolute expectation. Watching or monitoring students for the purpose of supervision comes with the territory of being a teacher. Teachers monitor students for many reasons. They monitor students to ensure their safety, to assess student work, and to maintain a pleasant classroom climate. The practice of tracking student attendance is a common way to identify at-risk students, whereas the practice of checking homework is a way to ensure that students do not fall behind in their studies. Despite all of the many ways that teachers watch over their students, for some reason youth can have very strong reactions to being watched electronically at school, particularly if they are not made aware that they are being observed in this way. But if the supervision of students is accepted as a regular part of a teacher's duties, why would electronic watching be any different?

To address questions concerning technologized watching, I have narrowed the scope of this inquiry to focus primarily on the experiences that students and teachers have with classroom management software. An example of classroom management software is NetOp Vision, the software which was used to electronically watch over students in the anecdote of the 14 year old boy in library. Faronics InSight, SMART Sync, and Lenovo LanSchool are examples of other classroom management software systems that are also used in schools. Classroom management software was originally developed to monitor students in a networked computer lab, however its use has now expanded to monitoring students on Chromebooks, iPads, tablets, thin clients, and laptops. With the growing use of these devices

in the classroom, an inquiry into the hidden curricula of this software is very timely.

The primary purpose of classroom management software is to control student behavior to increase productivity and efficiency. The websites and brochures that promote these tools are littered with accolades from teachers and school administrators that point to improved learning through increased control and efficiency. On the NetOp Vision website for example, there are numerous comments about the role that classroom management software plays in the classroom. One teacher comments that, "Through Vision Pro we keep a perfect control over our students, which has increased performance levels in class dramatically!" (NetOp website, 2016). Another educator, makes reference to her responsibility for enforcing school policy,

> If I didn't have Vision I would have a very difficult time maintaining the proper educational environment. We have a districtwide Acceptable Use Policy that I'm responsible for enforcing and maintaining. It would be next to impossible without Vision. (NetOp, 2016)

These statements point to the ways in which classroom management software serves to help teachers maintain control over the students who are placed in their care. Yet, this emphasis on policy enforcement and increasing productivity and efficiency leaves me wondering exactly how students fit into the surveillance equation.

In many ways the use of this software to keep students productive and on-task is representative of the dominance of the technical-instrumental mindset that currently exists in today's education system. This attitude is what Habermas (1984) refers to as instrumental rationality and is a line of reasoning that is calculated, driven by efficiency, and tends to reduce relationships to those means and ends. A special report entitled More Time to Learn

(2008), claims that SMART Sync can save teachers 14 minutes a day in a typical 50 minute class. The report contains charts and figures that quantify how, on average, the use of the software results in a 70 % time savings for "non-value adding" administrative tasks such as walking around the classroom to keep students on task. What reports like this fail to recognize is that tasks such as walking around the classroom can in fact be very much "value adding". It is these walks around the classroom that open possibilities for teachers to meaningfully engage with students one-on-one. There are countless stories of students whose lives have been forever changed by a teacher who connected with them on a personal level. Analyses which attempt to neatly compartmentalize various aspects of teaching into categories of "value-added" and "non-value added" completely obscure the reality of what teaching is all about. Teaching is not only about test scores and implementing curriculum, but also about creating a supportive environment built on trust, mutual respect, and genuine care for students.

The ability to see beyond the instrumental view of technology is a critical starting point for understanding the role of surveillance technology in schools. It would be dangerous and short sighted to limit our attention to things like control, productivity, and time on task, because "no one reading [of surveillance technology] can resolve the infinite complexities that it brings to societal structures on miso, micro and macro levels." (Taylor, 2013, pp. 6-7). Admittedly productivity is important, but productivity means very little if it can only be accomplished in in a highly controlled environment. Education is about more than control and productivity, it is about fostering active learners who can engage in creative and critical thinking. It is about instilling a sense of agency and allowing youth to grow into autonomous individuals who can think for themselves. Thus, when considering surveillance technology in

schools we must widen our outlook to include things like the actual experiences that teachers and students have with this technology.

Schools are not like other public institutions. Schools are a place of human development and growth. They are the birthplace of the “citizen ideal” and the means by which social and cultural continuity is sustained and forwarded.

> [Schools’] unique position in society bestows upon them the ability to determine how future generations will understand, perceive and experience surveillance. Taking schools as microcosms of society, they can provide a prophetic glimpse of the surveillance vista of the future… (Taylor, 2013, p.12)

Thus, we cannot afford to ignore the subtle messages of surveillance technology. Winner (1986) warns that we must awaken from our "technological somnambulism” and reject the idea that technological innovation is necessarily equated with progress and improvement. He urges us to consider the consequences and wider implications of technology in our lives. In a similar vein, Adams (2012) warns us how habituating to any technology represents a “retreat of critical discourse regarding its presence”(p. 268).

Research Question

The purpose of this inquiry is to expose the hidden curricula of electronic surveillance technology in schools and to bring to light the new ethical demands and responsibilities that come with it. Unveiling the hidden curricula of surveillance technology is not intended to necessarily provide all the “answers”, but rather to challenge our understanding of surveillance technology and to provoke a deeper awareness of the context in which it operates. Exposing the hidden curricula of surveillance technology also serves to challenge many commonly taken-for-granted assumptions regarding the electronic surveillance of

youth. This includes assumptions regarding why these tools are needed in schools, the ways in which these tools alter the choices we make, and exactly who is impacted by the introduction of surveillance technology in school settings. Most importantly exposing the hidden curricula of surveillance technology draws attention to the ethical issues that unfold when surveillance technology is introduced in schools, while also providing teachers special considerations for the continued use of these tools in schools.

To explore the hidden curricula of surveillance technology I turn to postphenomenology to study the experiences that teachers and students have with classroom management software. By honing in on specific experiences with classroom management software, we not only learn a great deal about a particular experience, it also provides insight into the nature of surveillance technology in general. As such, this inquiry will explore the particularities of the worlds convened by a technology, and not simply the technology itself. When humans relate to and interact with their world through technology, it is not "merely an imitation or reproduction" that comes into being but rather a new "variant world" (Ihde, 1983, p. 59). Drawing attention to this new world can tell us a great deal about the hidden curricula of surveillance technology. In addition, the postphenomenology of Don Idhe (1990) is particularly well suited for uncovering the hidden curricula of surveillance technology because it focusses on the nature of the various human-(surveillance)technology-world relations which emerge every time we engage with the world through technology. Importantly, postphenomenology recognizes the co-constitute nature of technology, including the mediating role that technology plays in constituting who we are and how we perceive our world. We have barely begun to grapple with our co-constitutive relationship with technology, including the new worlds of possibilities that technology opens while

simultaneously closing down others (Adams, 2012; Introna, 2007). Exploring the mediating role that surveillance technology plays in quietly shaping and informing a teachers' way of being in the classroom is of utmost importance. "If we are attentive to our own digital becoming, we may discover a revitalised sensitivity to the robust yet also deeply local, naked, and thus profoundly open ecology of the individual, human self" (Adams, 2012, p. 271).

The research question that this inquiry asks is: *How do youth and educators experience electronic surveillance technology in schools?* In attending to the lived experiences that teachers and students have with surveillance technology, this inquiry addresses four important subsidiary questions, including what these experiences may reveal to us about:

1. The hidden curricula of surveillance technology
2. Human-(Surveillance)Technology-World Relations
3. New pedagogical practices that may unfold
4. The values and beliefs that are built into the design of surveillance technology

While my study ultimately presents a postphenomenology of surveillance technology in schools, exploring the ethical implications of using these tools is very much a driving forcing of this inquiry. I draw on phenomenology to open up a horizon for ethical reflection (van Manen, 2014) and to interrogate existing assumptions, practices, and discourse surrounding surveillance technology in schools. The ethical-philosophical attitude of phenomenology is important because it displaces and confronts our unexamined assumptions that influence our perceptions of our world. Phenomenology is just not a philosophical perspective, "it is the source for questioning the meaning of life as we live it, and the nature

of responsibility of personal actions and decisions" (van Manen, 2014, p. 2). This attitude facilitates reflectivity and unearthing meaning from our everyday prereflective experiences. In this way, phenomenological analysis forces us to reexamine some of our most fundamental human categories—namely our moral categories (Introna, 2017). Positioning surveillance technology in the midst of this difficult theoretical space enables us to address the ethical and pedagogical concerns that the research literature has devoted very little attention to.

Approaches to an Ethics of Technology

The agenda for an ethics of technology is largely influenced by how technology is framed. As scholars have moved beyond the view that technology is neutral, this has resulted in a variety of conceptualizations of technology. These include the view of technology as a political phenomenon (Feenberg, 1999; Sclove, 1995; Winner, 1985), a social activity (Latour, 2005; Law, 1991) and a cultural phenomenon (Borgmann, 1984; Ihde, 1990). In addition, some philosophers have ethically reflected on a specific technology such as computers (Johnson, 2001; Weckert 2007; Van den Hoven and Weckert 2008), biotechnology (Thompson; 2007), and nanotechnology (Allhoff, Lin, Moor, & Weckert; 2007). Other ethical issues that have been studied include issues related to the development, design, and dissemination of technology as exemplified by Andrew Feenburg's work (1999, 2005). It is beyond the scope of this study to explore each in depth; however, each is very useful in its own rite. While there is agreement that technology is indeed not neutral, there is not a general consensus regarding the nature of technology and the manner in which technology transforms and shapes our world. This study has been informed by two predominate views regarding the nature of technology. This includes the phenomenological

and constructivist views of technology, both of which carry unique and equally important ethical considerations.

Social constructivists view technology as socially constructed artifacts or actors. This perspective recognizes that the tools of our world are not passive waiting to be used, but rather these tools forcefully transform and shape our world. In the design, implementation, and use of technology there is an ongoing reciprocal relationship in which man and technology act through and upon each other. In this way, technology enacts 'scripts' (Latour, 2005) and calls on us to respond in prescribed ways. This view of technology as a socially constructed actor is particularly salient for exploring human-(surveillance)technology-world relations because it recognizes that classroom management software has the potential to shape students' and teachers' activity patterns and meaning structures. In addition, this perspective takes into account the many ways in which cultural, political and economic forces shape the design and implementation of surveillance technology, and in turn how these choices circumscribe man's possibilities.

Some scholars who view technology as socially constructed such as Winner (1985), Sclove (1995), and Feenburg (1999) have taken a political approach toward an ethic of information technology. Winner (1986) for example, argues that some technologies are more compatible with certain social-political relations and embody forms of power and authority. For these scholars the task of ethics has less to do with prescribing policies but rather examining the assumptions, values, and interests that are built into the design, implementation, and use of technology. While the disclosure of values and interests that are built into the design, implementation, and use of surveillance technology certainly comes out in my research, the democratization of surveillance technology is not my main concern. My

key interest is in how students and teachers experience surveillance technology and what this tells us about how surveillance technology may direct, and shape pedagogical choices that are made in the classroom. Embracing the notion that surveillance technologies are socially constructed actors this inquiry explores how surveillance technology "insists on being used" and what this says about the underlying assumptions about the purpose of education, the role of the teacher in the classroom, and the learning environment.

Like constructivists, phenomenologists recognize that technology is more than just a means to an end, and that technology shapes and transforms how the world is experienced through them. Phenomenologists however contend that the nature of the human-technology relation is co-constitutive, and draws on each other for meaning (Introna, 2017, Adams & Thompson, 2016). As such, technology and the things of our world, increasingly play a role in constituting who we are. In Heidegger's (1971) words, we are "called by the thing as thing" precisely because "we are the bethinged, the conditioned ones" (p. 178). While there is not a vast amount of phenomenological literature that has set out to specifically study the ethical implications of technology, many phenomenological thinkers have opened a horizon for ethical reflections (Introna, 2017). The task of ethics for the phenomenologist is ontological disclosure (Introna, 2017), and to remind us of our most fundamental human categories. Examples of phenomenological approaches that point towards an ethics of technology include: phenomenology as a critic of the technical attitude (Heidegger, 1977); phenomenology of the human technical relationship (Ihde, 1990); and the manifestation of the technical attitude in our relationship with technology (Borgmann, 1984). One common theme among these phenomenological studies is the unveiling of the taken-for-granted technological attitude and the assumption that technical innovation inevitably represents

progress. Through this unveiling, phenomenology draws out ethical tensions by challenging and problematizing our ongoing being-with technology. In the revealing of our co-constituting ontological relationship with technology, phenomenology opens up important ethical considerations and interrogates existing assumptions, practices, and discourse.

Postphenomenology, "the technology focused offspring of phenomenology" (Adams & Turville, forthcoming 2018, p. 1) also recognizes our co-constituting relation with technology. Postphenomenology explicitly addresses our relations to technologies as relations of *mediation*. Here, technologies are placed *in between* the phenomenological description of the human as a "being-in-the-world" (Heidegger,1982), that is, inseparable from their world. Thus, for postphenomenologists, human-world becomes human-technology-world, or in the case of surveillance technology a human-(surveillance)technology-world, designating how our the immediacy of our intentional relations in the world are always already mediated by technologies-in-use.

Postphenomenology is able to discover some of the ethical tensions that surface when surveillance technology is used to watch over youth by revealing the amplification and reduction structures that surface when surveillance technology mediates our world. Ihde (1979) explains that when technology amplifies our capabilities (i.e. a telescope permits us to view objects in outer space), it simultaneously reduces our capabilities in some way (i.e. a telescope restricts the field of view so we never see the object in relation to other objects in the sky) (p. 21). These amplification and reduction structures are an invariant aspect of all experiences whereby technology mediates our world, including every time we engage in human-(surveillance)technology-world relations. In the context of this study, the ethical task of postphenomenology is to draw attention these amplification and reduction structures by

paying close attention to what aspects of experience may be lost or diminished when surveillance technology is used to watch over youth.

A postphenomenology of technology is increasingly important because it recognizes that technology is more than just a "means to an end", rather it modifies and transforms the world that is experienced through them in very profound ways. The manner in which postphenomenology reveals the problematization of the human-(surveillance)technology-world relation can aid in opening up a horizon for ethical reflection. In this way postphenomenological insight "may serve in promoting more critically circumspect applications of different technologies in pedagogical settings, and in advancing a long-overdue revision to our taken-for-granted assumptions and practices with technologies in education" (Adams & Turville, forthcoming 2018, p. 29).

While many phenomenologists contend that the impact analysis and the disclosive analysis of technology would be best situated within a broader phenomenological analysis, this study does not take an exclusive phenomenological approach. Insight from surveillance study literature reminds us that the ethical tensions that surround the use of surveillance technology are not solely ontological, relational, or actional in nature, but also political, situational, and cultural. Surveillance technology does not exist in a vacuum, and therefore there can be no thorough investigation of the ethical implications of surveillance technology in schools without attending to the political and cultural context in which it exists. In order to fully address the multiple ethical dimensions of surveillance technology there must be equal consideration of the ontological, political, social, actional, and relational implications of these tools. By drawing on literature and research from the disciplines of education,

surveillance studies, and the philosophy of technology, this interdisciplinary inquiry is able to explore these equally important ethical dimensions of surveillance technology.

Summary

In many ways this inquiry is a departure from the traditional concerns of the field of educational technology in that it rejects the neutrality of technology and challenges the instrumental mindset which prioritizes the values of efficiency and productivity. In general educational technology research tends to lean toward an overly optimistic view of technology (Selwyn, 2000). In most cases, technology is viewed as a tool that simply extends human capabilities, enabling humans to do things that would otherwise be impossible. Indeed "the mantra, 'it's just a tool' is still used to describe the belief that technology is neutral and that the teacher or student alone is responsible for constructing educational meaning" (Adams & Turville, forthcoming 2018). The assumption is that technology operates in uniform, predictable ways and that the user is always in complete control. This optimistic rationalism represents a failure to go beyond a linear "cause and effect" mindset and promotes a disproportionate value on the "efficiency" of the technology, which has resulted in other important questions concerning the role of technology in schools going unasked (Selwyn, 2000). Questions concerning the numerous unintended consequences of technology, and the nature of these consequences are typically not addressed. In contrast this study views surveillance through a critical lens and recognizes that through its design surveillance technology re-orients and shapes how we perceive the world, thereby compelling the emergence of new activity patterns and routines.

This study is unique in that it is an interdisciplinary study which heavily draws on both postphenomenology and literature from the field of Surveillance Studies. By drawing on

literature and research from the disciplines of education, surveillance studies, and the philosophy of technology, this interdisciplinary inquiry brings to light new perspectives and ways of understanding surveillance technology in schools. Indeed no single reading of surveillance technology can address multitude of ethical implications that comes with the use of surveillance technology to watch over youth. The complex political, social, actional, and relational nature of surveillance makes it difficult to disclose all of the values and beliefs which are built into the design of surveillance technology through a single analytical framework. The hidden curricula of surveillance technology and the ethical tensions that come with it operate on multiple levels. Surveillance technology not only touches us at the ontological level, altering who we are as human beings, it also shapes the political and social landscape which makes up the context in which we live.

The literature review in Chapter 2 is an important starting point for exploring the hidden curricula of surveillance technology and the ethical demands and responsibilities that come with it. This chapter provides a sound theoretical framework for understanding the technical surveillance of youth. The second portion of the literature review examines how surveillance technology is used to watch over youth both at school and in their personal lives. The literature review is helpful in that it provides a general overview of the many ways in which surveillance technology is currently used to watch over youth both at school and in their private lives. Chapter 3 explores how posthuman research (Adams & Thompson, 2016), Max van Manen's phenomenology of practice (2014), and Adams and Turville's postphenomenology of practice (forthcoming 2018), informed the methodology and theoretical framework for this study. Chapters 4 and 5 explore the hidden curricula of surveillance technology by investigating teachers' and students' experiences with

surveillance technology and the values which are built into its design. Chapter 4 is a strictly postphenomenological analysis of teachers' and students' experiences with classroom management software which is based on phenomenological interviews which were conducted as part of this research study. Insights from Chapter 5 are largely gleaned from a combination of lessons learned from the postphenomenological analysis in Chapter 4 and understandings uncovered in the surveillance study literature review in Chapter 2. The intent of Chapter 5 is to expose the hidden curricula of surveillance technology by challenging commonly taken-for-granted beliefs about surveillance technology through postphenomenological and disclosive analysis. In doing so many of the hidden values and beliefs that are built into the design of the surveillance software are brought to the forefront. Chapter 6 gathers everything together by highlighting how the postphenomenology of Don Ihde (1990) informed this study, by exploring what the surveillance school of the future may look like, and by offering directions for the future.

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Chapter 2: Literature Review

Introduction

In order to bring to light the ethical and pedagogical issues that unfold when surveillance technology is introduced to schools, it is helpful to turn to the field of surveillance studies. Not only does interdisciplinary research prompt new questions it also serves to generate new ways of looking at existing problems. Revisiting the classical surveillance debate concerning the power differential that is caused by surveillance provides a strong starting point for exploring the ethical implications of surveillance technology in schools. Discourse around civil liberties, privacy, the imposition of power, the technological assemblage and subsequent classification of people also provides a strong theoretical framework for understanding the many roles that surveillance has in our lives. In addition, the existing literature is helpful in that it serves to provide a general overview of the many ways in which surveillance technology is currently used to watch over youth both at school and in their private lives.

This general overview of surveillance studies literature provides a brief introduction to important developments which are particularly relevant to the ethical implications of the surveillance of youth. First the definition of surveillance will be provided followed by a brief history of surveillance technology, including the panoptic and post-panoptic discourses that have followed. The second part of this literature review largely focuses on specific types of surveillance technology that are used to watch over youth both at school and in their private lives. Examples of surveillance technologies that will be explored in this literature review include: video surveillance, Internet filtering and monitoring software, classroom

management software, RFID (radio-frequency identification) systems, GPS (global positioning system), mobile phone applications, biometrics, social media monitoring software, and tracking tools that are found in Learning Management Systems (LMS) such as Moodle or Blackboard.

Surveillance Studies: Defining Surveillance.

Although the term surveillance might bring to mind a covert undercover operation that involves following and documenting the activities of some dubious character, its meaning is certainly not limited to that context. The term surveillance is rooted in the French verb *surveiller*, to watch over, and can be broken down into *sur* (over) and *veiller* (to watch). The verb *veiller* comes from the Latin *vigilare* or *vigil*. A vigil, or a watch kept during normal sleeping hours, conjures up very a different image than a covert undercover operation. In this case the observer's primary role would be to stand guard out of concern for the safety of the person (or thing) being watched. So while all types of surveillance certainly have protective undertones, the subject being watched could be either the entity being safeguarded or the potential threat. Furthermore, a subject who is being watched can certainly fit into both categories, as in the case when someone could potentially be a 'victim' of oneself.

Since the term surveillance comes with so much ambiguity it is helpful to turn to the field of Surveillance Studies for a definition. David Lyon (2007) defines surveillance as, "the focused, systematic, and routine attention to personal details for purposes of influence, management, protection or direction" (p. 14). Surveillance is not limited to visual observation and is commonly used to describe observation from a distance by means of electronic equipment or other technological means. For example, some digital surveillance

technologies are associated with watching such as closed-circuit television (CCTV) cameras, other surveillance technologies are associated with listening such as wiretaps, yet other surveillance technologies involve the monitoring of individuals' actions through communication technology and computer networks. The monitoring of activities and communication through technology for the purpose of the collection, screening, and categorization of personal data has been termed dataveillance (Clarke, 1992). These bits of electronically captured data about individuals are then amalgamated and analyzed to create overall images or profiles of individuals.

In many ways surveillance has become a part of everyday life and can be considered endemic in modern societies (Haggerty & Ericson, 2006; Lyon, 2007). In fact surveillance has become so commonplace that it has been called a pervasive feature of modernity (Giddens, 1985). Some forms of surveillance, such as the use of CCTV cameras in public places, have become so widespread that these technologies often disappear into the background and at times go completely unnoticed. As these surveillance technologies become increasingly more prevalent in all aspects of contemporary life, they are also becoming more common in our schools (Monahan & Torres, 2010; Taylor & Rooney, 2016). Some examples of digital surveillance technologies in schools that have been explored in the literature include CCTV cameras, Internet monitoring and filtering software, classroom management software, Learning Management System (LMS) tracking software, social media monitoring software, Radio Frequency Identification (RFID) chips, and biometric surveillance devices such as iris, pupil, palm, and fingerprint scanners. Other newly emerging surveillance technologies in schools that have been reported in the media include small scale

pilots of body webcams in a UK school (Vincent, 2017; Pells, 2017) and Galvanic Skin Response (GSR) Bracelets in the US (Mayhew, 2012).

A Brief Overview of the History of Surveillance Technology

Surveillance technologies are not new. As early as 3340 BC the ancient Egyptians kept population records for the purposes of taxation, military service, and immigration. The nomadic people of Israel undertook censuses as far back as the fifteenth century BC. The use of writing, whether on stone, parchment, or clay, served as a surveillance technology, allowing the tracking of movements of people in ancient civilizations. In 1086 a record of English land-holding began in the Domesday Book, which contained a massive collection of facts about people and property. It not only served to manage property by tracking tenancies and inheritances, it also enabled the Norman administration to consolidate power. What each of these historical examples have in common is that surveillance technology was a means to watch over populations of people for purpose of government, management, or control (Lyon, 1994). Systematic broad scale surveillance however did not show its face until modern times. The institutionally centralized modern surveillance that we see today has evolved with the growth of military organization, industrial towns and cities, government administration, and the expansion of capitalistic business (Lyon, 1994).

As technology for surveillance purposes became more advanced, both the nature and extent of surveillance has changed. For example when papyrus was replaced with printing this expanded administrative power and facilitated the development of modern democratic governance (Lyon, 1994). In part, this is what enabled the British government to conduct the large-scale bureaucratic surveillance that was required to enforce conscription in 1916. During the same time period telephone communications significantly strengthened policing

and government administration. But it was the shift from paper-based to digital record keeping that has heralded the most significant changes in the nature and scope of surveillance (Lyon, 1994). Technical advances in the cost of storing and processing information has made the gathering, storing, and dissemination of information easier than ever before. With the proliferation of the Internet and recent improvements in digital processing speeds and storage capacity, surveillance methods have once again transformed. These new surveillance methods tend to be more intensive and far reaching, have lower visibility, and at times can be involuntarily such as when data is collected about people online without their knowledge (Marx, 2016). Some examples of relatively new forms of surveillance include computer network monitoring, computer profiling, facial recognition, DNA analysis, GPS tracking, biometrics, and social media monitoring. However, the future of surveillance could very well lie in the widespread use of biometrics. Biometrics are technologies designed to measure and classify unique human attributes like fingerprints, retinal or iris patterns, and the dimensions of the palm of one's hand. Keenan (2016) predicts the increased use and application of newer forms of biometrics which measure heart rhythms, brainwaves, DNA, body odor, and even gestures such as how one walks, which is known as gait analysis. In fact, biometric surveillance systems that utilize cardiovascular, respiratory, and pheromones sensors have already been tested in American airports to detect criminal intent and terrorist activities (van der Ploeg, 2009).

Theorizing Surveillance: Foucault and Panopticism

The panopticon has become "the most widely used metaphor for surveillance" with the panopticon at times even being used as a synonym for surveillance (Galič, Timan, & Koops, 2017). The roots of the word 'Panopticon' are very telling of the role that the

panopticon serves in society. Panopticon is a Greek neologism that can be understood in terms of '*pan*' meaning 'everything' and '*opticon*' meaning 'vision'. The all-seeing panopticon is a circular prison with cells arranged around a central tower from which guards can see every prisoner at all times. This architectural design permits everyone and everything to be seen, at all times. Jeremy Bentham's (1995) account of the panopticon arguably provides one of the first meaningful ethical analyses of surveillance, which was later famously revisited by Michel Foucault in *Discipline and Punish (1979).* Some have argued that this has resulted in Bentham's conception of the panopticon being distorted and misunderstood through the reading of Foucault (Brunon-Ernst, 2012; Galič, Timan, & Koops, 2017). Foucault's analysis of the panopticon emphasizes the imposition of power and control on individuals who are in need of discipline and correction; whereas Bentham on the other hand, emphasizes that the panopticon may serve to eliminate the need for the watch guard all together. The idea being that "discipline would be internalised and the need for the (guard), the watching itself, would be eventually exhausted" (Galič, Timan, & Koops, 2017, p. 12). Recognizing the potential of the panopticon design for other uses, Bentham also drew up plans for a circular nursery and designed several schools, often using a semi-circular design (Markus, 1993, p. 68). At the time Jeremy Bentham, claimed his design would 'invigorate industry', 'reform morals', and 'facilitate education' (Hope, 2005).

In *Discipline and Punish (1979),* Foucault explores his theory of knowledge-power relationships by tracing the history of the penal system; however, it is his analysis of the panopticon in particular, that has had the most significant impact on surveillance studies. Foucault (1979) describes the architectural design of the panopticon in great detail:

> … at the center a tower; this tower is pierced with wide windows that open onto the

> inner side of the ring; the peripheric building is divided into cells… they have two windows, one on the inside, corresponding to the windows of the tower; the other, on the outside, allows the light to cross the cell from one end to the other. All that is needed, then, is to place a supervisor in a central tower and to shut up in each cell a madman, a patient, a condemned man, a worker or a schoolboy. By the effect of backlighting, one can observe from the tower …the small captive shadows in the cells of the periphery…. In the peripheric ring, one is totally seen, without ever seeing; in the central tower, one sees everything without ever being seen. (p. 200)

Authority and control is facilitated in the design of the panopticon by enabling a large number of prisoners to be easily monitored from a central location. Although the panoptical design of the prison is a major part of Foucualt's (1979) analysis, he extends the panopticon metaphor to other institutions such as schools and hospitals, where the goal is making the inhabitants or users of that institution visible to those in charge. According to Foucault (1979), crucial to the success of the panopticon is the uncertainty that it induces in the minds of those being watched. Much like being watched by surveillance technology, those being watched in the panopticon do not know when or whether they are being observed. It is through this visibility of visibility, Foucault claims, that modern society exercises its controlling systems of power and knowledge. Thus, power and control can operate without coercion.

The significance of Foucault's work is that it not only offers a framework for studying the past, but also provides a means for understanding the disciplinary and controlling attributes of today's surveillance technology. Lyon (1994) for example suggests the panopoticon is no longer limited by the walls of an institution, but has extended in both

time and space. For example, Zuboff (1988) makes reference to the 'information panopticon', whereby information technology, rather than architectural design creates panopticism. Others have evoked the idea of the 'electronic panopticon' to convey how computer systems can be used to facilitate surveillance (Sewell &Wilkinson, 1992). Poster (1990) put forward the concept of the 'SuperPanopticon' to convey the idea that all aspects of life, including education, are becoming subject to surveillance. Other theories of surveillance that draw on the panopticon metaphor include the panoptic sort (Gandy 1993), post-panopticon (Boyne, 2000), ban-opticon (Bigo, 2006), and urban panopticon (Koskela 2003).

While Foucault (1979) does not directly address the role of digital surveillance technology in *Discipline and Punish* his treatment of the panopticon metaphor is certainly relevant to many forms of surveillance technology that are used in education today. The rise of CCTV cameras in schools is the most obvious example of this. Much like the role of the Orwellian big brother in the novel *Ninety Eight-Four*, CCTV cameras exercise power through the concept of 'visibility of visibility'. That is, power is asserted through awareness of being watched, which in turn serves to control behavior. In the case of CCTV cameras, video footage can be stored, allowing the watcher to be omnipresent in both time and space. Panoptic surveillance in schools has been studied in the context of CCTV cameras (Hope, 2005, 2013; Koskela, 2000, 2003), computer network monitoring (Hope, 2005; Steeves, 2016), tracking tools in course management systems (Dawson, 2006; Epling, Timmons, & Harrand, 2003), and in education in general (Gallager, 2010; Hope, 2013, 2016; Nemorin, 2017; Selwyn 2000).

Despite the strong parallels between the controlling effects of the panopticon and many forms of surveillance technology, it important to recognize that there is more to Bentham's "panoptic paradigm" then the authoritarian, disciplinary aspects described by Foucault (Brunon-Est, 2012). In fact, Bentham's chrestomatic-Panopticon, the Panopicton shaped school, has some anti-panoptic features (Galič, Timan, & Koops, 2017). First of all in the case of the chrestomatic-Panopticon the concept of constant visibility does not apply because the panoptic gaze is only limited to school hours. Secondly there is only one school master and 600 students, requiring the more advanced students to teach the less advanced. In this way the chrestomatic-Panopticon seems less about centralized power and control, and more about efficiency, cost savings, and shared responsibility. Contrary to Foucalt's analysis, the chrestomatic-Panopticon can hardly be viewed as a disciplinary mechanism that is in place to control individuals' behaviors. Rather it is a way to manage large populations of school children while also regulating social behavior, both of which are characteristic of most traditional schools. The variations between Bentham's panoptic prison and his description of other panoptic architectural structures, such as schools and hospitals, has been largely overlooked in the literature (Brunon-Ernst, 2012; Galič, Timan, & Koops, 2017).

Theorizing Surveillance: Post-Panopticism

The predominance of the panoptical approach for theorizing surveillance has led to many surveillance scholars to advocate that it is time to move beyond the Panopticon (e.g. Haggerty 2006; Lyon, 2006). Haggerty (2006) for example has expressed concern that,

> each new 'opticon' points to a distinction, limitation, or way in which Foucault's model does not completely fit the contemporary global, technological or political dynamics of surveillance. At the same time, the inability to abandon the metaphor

> signals that the panopticon now stands for surveillance itself. At times it appears that characterizing surveillance as 'panoptic' is little more than a force of habit as opposed to a sober evaluation... (p. 26).

Indeed many attributes of modern surveillance fall outside of the panoptic framework. For example, often individuals do not know when or how they are being watched online and may not understand how databases are used to construct personal, consumer, student, or citizen profiles. As Williamson (2017b) observes,

> In contemporary societies of control where computational processes and algorithms are increasingly powerful in social organization, we encounter not the central tower of the Panopticon but a post-panoptic swarm of code, constantly interacting with individuals by extracting their personal data, connecting it up in massive relational datasets, and then self-organizing automated recommendations and suggestions (p. 52).

The unprecedented reach of dataveillance enables silent, invisible, continuous, and automatic monitoring of individual's everyday life, which is a very different form of surveillance than the highly visible disciplinary panoptic surveillance.

Accordingly many scholars are moving away from Foucault's analysis of the panopticon in favour of addressing other important contemporary social and technological issues related to the surveillance society (Caluya, 2010). Questioning Foucault's continued predominance in surveillance studies, Haggerty (2006) goes as far as to suggest that, "it is perhaps time to cut off the head of the king" (p. 27). While there is widespread agreement that it is time to push beyond Foucault, many scholars continue to recognize the contribution that Foucault's panoptical analysis has made to the field of surveillance studies. For example, in Lyons's (2006) introductory chapter of *Theorizing Surveillance: The Panopticon and*

Beyond, he argues that even though it is time to move beyond the panopticon, surveillance theory cannot ignore the core principles of the panopticon (p. 12).

Some examples of reoccurring themes in surveillance studies that have moved beyond the panoptic metaphor include the development of policies and recommendations that negate the negative consequences of surveillance (Warnick, 2007; Marx, 1998), the tension between the collective and private interests (Lyon, 1994, 2001), the dehumanizing effects of digital surveillance technology (Solove, 2004), the surveillant assemblage (Haggerty & Ericson, 2000), and the relationship between dataveillance and social sorting (Clark 1988, 1992; Lyon 2003; Haggerty 2006). In addition, some scholars have turned to the work of Deleuze and Guattari. For example, Haggerty and Ericson (2000) draw on the work of Deleuze and Guattari (1987) to introduce the concepts "rhizomic surveillance" and the "surveillant assemblage". The surveillant assemblage refers to abstracting the human body and reassembling it as an individuals' digital data double (2000, p. 606). Drawing on an invasive rhizomatous plant metaphor, Haggerty and Ericson (2000) accentuate two attributes of the surveillant assemblage. Firstly, the surveillant assemblage is expansively growing with expanded uses. Secondly the surveillant assemblage has a levelling effect on surveillant hierarchies. For example, groups which were previously exempt from routine surveillance are now increasingly being monitored, which now also includes the observation and the scrutiny of those in power. Thus surveillance may serve as an equalizer because it makes everyone equally accountable for their actions regardless of the power relations that are at play.

The Ethics of Surveillance Technology

Much of the surveillance study literature frames the act of surveillance as an ethical act. The ethics of surveillance technology has been examined from many different angles. Some have approached the ethics of surveillance from a policy point of view (Marx, 1998; Mason, 1986), personal privacy perspective (Introna & Nissenbaum, 2000; Introna & Pouloudi, 1999; Lyon, 1994, 1996, 2003; Marx 2001; Monahan; 2008), theological perspective (Stoddart, 2011), while others have emphasized issues of equality and fairness (Gandy, 1993, Lyon 2003, 2007) and the effects of dataveillance (Williamson, 2017b). Among these varied ethical approaches there are several reoccurring themes that have surfaced in the literature. The five themes which are most relevant to studying the moral and ethical implications of surveillance technology in schools include the dehumanizing effects of surveillance technology, one's responsibility for the Other, the reinforcement of existing social inequalities, the surveillance of care, and the rights based and ethical practice approaches.

Dehumanizing Effects of Surveillance Technology. In *The Digital Person*, Solove (2004) addresses ethical questions regarding surveillance in his discussion of the dehumanizing effects of digital surveillance technologies. Solove (2004) admits that where surveillance is concerned, "there is no diabolical motive or secret plan for domination" (p. 41) but he is concerned that even accurate computer data is not nuanced enough to paint a complete picture of a person. Perhaps even more troubling is the fact that an error in computer profiling could result in negative consequences such as being denied a job or put on a watchlist. Lyon (2003) reminds us that the creation of data-doubles and the resulting categorical social-sorting has implications for people in their daily lives and is therefore a

political and ethical act (Lyon, 2003). This use of databases points to a thoughtless bureaucracy that dehumanizes people and has little concern for the well being of those who have no control over how their personal data is used (Zuriek, 2007). Similarly, Bryce et al. (2010) warn of the "dehumanising, shift from social to informational ways of authoritative knowing, from reliance on rich narrative accounts about people to shallow database profiles" (p. 15).

Along the same lines of the Soloves's digital person, Williamson (2017b) introduces the concept of the 'dataveillance schools' to explore the dehumanizing effects of surveillance technology in the school setting. An important ethical concern that Williamson (2017b) raises is that "dataveillance schools translate children into calculable datasets" (p. 63). Williamson (2016) identifies two main areas of dataveillance techniques in schools. The first is "learning analytics" which collects data about children's educational activities and the second is "personal analytics" which are used to monitor, track, and assess the bodies of children though wearable electronics and biosensor devices (p. 50). For Williamson (2017b), these practices are problematic because the translation of children into calculable datasets produces "child data doubles that allow them to be identified through digital traces of their activities and then acted upon by those who seek to govern their lives" (p. 64). Lyon (2001) goes as far as to say dataveillance makes people up and recommends a return to the embodied persons from whom the data is extracted.

Equally alarming is that the literature suggests the future of emotional analytics could make it feasible to monitor, measure, and display a reconstruction of a learners' emotional state by amalgamating data from facial and voice expressions, sweat glands, eye movement, and other psychological indicators (Rientes & Rivers, 2014; Williamson, 2017b). Galvanic

skin response (GSR) bracelets such as the Affectiva Q Sensor and Empatica's e4 wristbands are readily available online and are currently being used in a number of settings to measure things like attention, engagement, anxiety, and stress by analyzing physiological and electrodermal activity. Ironically these emotion detectors which are supposed to help teachers become more in-tune with their students, requires teachers to dislocate their immediate attention away from students and instead focus on and read a pedometer like device. This practice has been viewed as pedagogically offensive because it reduces reflective feedback to biologically measured emotional impulses, while also circumventing and compromising engaged dialogue and communication between teachers and students (Giroux, 2013).

The literature also points to ways in which surveillance technologies may compromise relationships between parents and children. When parents continuously monitor their children through electronic devices parents may feel that they "no longer need to be present or available to discuss with their children where they are, what they are doing and with whom… so long as they are tracking them" (Taylor & Rooney, 2017, p. 7). When surveillance devices become a substitute for physical presence and the availability of the parent, these devices may compromise personal connections that parents have with their children. Similarly, Rooney (2012) expresses concern that surveillance devices are often considered the best way to know what children are up to, even more so than building trust, talking with children, and simply being physically present.

Responsibility for the Other. Related to Solove's dehumanized digital person is the concept of Introna's de-facing screen. According to Introna (2003), the problem of the computer screen is that it reveals the world according to the screen's own categories.

> In facing screens I have become uneasy with the way they seemed to 'distance' me from those I already knew and from those trying to appeal to me for my resources. It just seemed easier to type 'no, sorry I cannot help' than to do so while facing the other—not in an explicit obvious manner but in a very subtle and fundamental way. (Introna, 2003, para. 3)

Introna refers to the dehumanizing effects of technological mediation as 'screen defacing' or the 'fading out the face' (Introna, 2003). Stoddart (2011) echoes the dilemma of the meditating screen, "Whilst seeing someone without the interface of a screen might… thrust us into an ethical quandary over our appropriate response to a fellow human being, our response to a representation is one of which we can more readily dispose" (Stoddart, 2011, p. 33). In a similar vein, Lyon (2007) asserts,

> It is easier to place personal data in categories of criminal suspicion or consumer seduction, or to ban at the border certain categories of ethnic or national origin, when the bodies and especially the faces of the persons represented are absent (p. 193).

Compared to the face-to-face encounter, when human encounters are mediated through technology this offers a greater potential to diminish one's ethical responsibility to the person on the other side of the screen (Introna 2003, 2007; Stoddart, 2011). Indeed, it is much easier to deny a request for help when one is shielded from the discomfort caused when confronted with the face of disappointment, frustration, exasperation, despondency or desperation. The challenge of encountering someone through a screen however, goes beyond the simple act of dismissing someone with the flick of a mouse. For Introna (2003), the ethical problem of the screen is a phenomenological one.

Both Introna (2003) and Lyon (2007) turn to Levinas to disclose perhaps the greatest challenge of virtual encounters. According to Levinas (1969), when we encounter the face of the Other there is no restriction or limit on our responsibility for the face. Even before a single word is said or we are able to reflect on the situation at hand, we are made responsible for the Other because the infinite call of the face holds us hostage. In this moment of epiphany we become ethical subjects whose ego and selfish desires become secondary to the person facing us. Virtual encounters however are very different,

> (t)hrough the reports, screens, e-mail messages, and the like, the Other is re-presented and thematic ordered, progressively silenced. The possibility for fundamental (re)consideration are circumvented. The very source of the ethical relation, the trace of the Other, that disturbs, that calls me into question, fades (Introna, 2003, para. 17).

By revealing the world according to the screen's own categories, technological mediation reduces the opportunity for one to be held hostage by the face of the Other (Introna, 2003). Or as Stoddart explains (2011), "epiphany is in danger of being displaced by mere appearance" (p. 30). Also drawing on Levinas, Lyon (2001) asserts that a critical starting point for assessing the ethics of surveillance is the moral responsibly for other human beings. Quoting Bauman (1993), Lyon states that "…moral responsibility –being *for* the Other before one can be *with* the Other- is the first reality of the self, a starting point rather than a product of society" (Baunman, 1995, p. 13). The influence of Emmanuel Levinas is also evident in Lyon's ethic of care .

Surveillance of Care. Lyon (2003) contends that the two faces of surveillance "can be located on a continuum from care to control," and therefore "some element of care and some element of control are nearly always present" (p. 5). He continues to say, "in some

contexts, surveillance may ensure that certain groups or individuals are not discriminated against" yet in other contexts, "intensified surveillance may have socially negative effects which mean that proscription takes precedence over protection, social control over mutual care" (p. 17). The idea that surveillance has two faces has been echoed by Weis (2010) who notes that surveillance technology "observes on the one hand, and profiles on the other. Whereas one kind of watching feels protective, another feels punitive" (p. 214). Lyon (2014) insists that "care, not just control, should be included in the surveillance picture" and points out that an ethics of care must "go beyond commonly invoked claims to privacy, data protection or civil liberties" (2014, p. 31). For, Lyon (2014) the development of 'Fair Information Practices' is just the first step, and what is needed is serious reflection on ethical priorities.

In Lyon's critique of modern day surveillance, he expresses concern about how the instrumental approach to surveillance is displacing a moral orientation. It is problematic when data is gathered and used to make judgements about people based on whatever category they fit into. Lyon's (2001) counter to instrumentalism is to return to the embodied persons from whom data is extracted. Central to his ethic of surveillance is that 'people are at risk' (Lyon, 2007, p. 192) and he insists that we put people ahead of automated classification, both in the design and deployment of surveillance technology. To counter the threat that surveillance places on personhood and personal freedoms Lyon advocates a surveillance of care recommending, "[a]n ethics of care for the Other that extends to the practical welcoming of strangers, a nurturing of small-scale communities of many kinds... and a fostering of trust in appropriate ways" (2003, p. 154).

The manner in which Lyon brings to light the paradox of surveillance as both a means of social control and a form of care is particularly relevant to the surveillance of youth. Nowhere is the surveillance of care motif more evident than in the loving caring eye of a parent or the watchful eye of a teacher who is responsible for ensuring the safety and wellbeing of the children entrusted in his or her care. Warnick (2007) extends the surveillance of care motif to surveillance in schools by recognizing some of the benefits of caring surveillance. Student progress needs to be tracked in order to identify students who might need extra help. Programs that provide financial aid to those in need (i.e. lunch programs and tuition assistance) are made possible when economic resources can be tracked and monitored (Warnick, 2007). Others have suggested that when parents use surveillance technology to watch over their children that they often mistake control for care (Gabriels, 2016; Steeves, 2016; Taylor & Ronney, 2017). Gabriels (2006) warns that tracking apps on mobile phones, for example, "might create a situation of over- proximity, which deceives the parent into mistaking control for care" (Gabriels, 2016, p. 10).

Reinforcement of Existing Biases. A number of scholars have raised concerns about how surveillance technology may be used to reinforce existing systems of discrimination (Gandy, 1993; Lyon 2001). In his seminal work, Oscar Gandy (1993) describes how systems of discrimination can be reinforced via the 'panoptic sort'. He views the panoptic sort as victimizing because the decontextualized categorization of people results in incomplete misrepresentations that often reflects existing biases about race, gender, age, class, culture and consciousness (Gandy, 1993, p. 18). Similarly, surveillance technologies like CCTV cameras have been criticized for reinforcing existing biases and inequalities. For example, one CCTV study of public streets in the UK reported that young male minorities were

roughly twice as likely to be the object of surveillance compared to any other group (Norris & Armstrong, 1999).

The issue for Gandy is not loss of privacy but rather the political and economic consequences of not having control over how personal information can be used. Furthermore, he asserts that these systems divide people into groups of winners and losers based upon bits of personal information that are stored in databases, such as economic status and the neighbourhood in which one lives. In the same vein, David Lyon (2001) argues that the collection, sorting, and classification of personal data can result in the unfair means of making judgments about a person or group. He views these systems as having less to do with individualized suspicion and more to do with risk assessment. Essentially, it is "a form of social sorting, of categorizing persons and groups in ways that appear to be accurate, scientific, but which in many ways accentuate difference and reinforce existing inequalities" (Lyon, 2001, p. 174).

Rights Based and Ethical Practice Approach. Another method for the ethical analysis of surveillance technology is the rights based approach, which is often discussed in conjunction with suggestions for ethical practice. The rights based approach often views the ethical implications of surveillance as a balancing act between ensuring safety and protecting civil liberties. This approach largely views security and privacy considerations in relation to legal rights, which includes the protection of private information. While there is no one recognized set of principles or regulatory framework that outlines the control of information once it has been collected, Stoddart (2011) has identified some key themes that have emerged:

> Data is to be kept safe and processes ought to be transparent to public scrutiny whilst data is to be collected legally and fairly, with the knowledge or consent of the person involved. Similarly, processes ought to be in place for individuals to review information held about them, particularly with regard to its accuracy, and methods of redress are expected. It is incumbent upon those collecting data to do so only as is necessary. Data are to be maintained up-to-date, and information collected for one purpose ought not to be used for other purposes without an individual's permission or as required by law. (p. 26)

Similar suggestions for ethical practice have surfaced in a number of places in the literature. Many of these suggestions for ethical practice have been made in reverence to universal rights such as the respect of the dignity of the person (Marx, 1998). Other rights that have surfaced in the literature that are particularly relevant to the surveillance of youth include liberty rights, welfare rights, developmental rights, and and the right to an open future (Warnick, 2007).

In the context of schools it is difficult to talk about the ethics of surveillance technology without considering the privacy rights of children. Political theorists think of privacy rights in terms of liberty and welfare rights (Archard, 2006). While moral and political philosophy generally accepts that adults have both liberty and welfare rights, the picture is not as clear with children. Liberty rights (also called agency rights) are concerned with respecting human autonomy and the right to choose how one lives. This includes the right to vote, and freedom of expression, religion, and association. Welfare rights on other hand are concerned with basic needs and safety. Most people agree that adults have a moral obligation to ensure that the welfare rights of children are provided for (Warnick, 2007).

Liberty rights on the other hand are dependent upon one's maturity and mental capacity to make decisions. Essentially "freedom to choose presupposes the capacity to make rational decisions" (Warnick, 2007, p. 321). Thus, it is impossible for very young children to make informed decisions because they have limited cognitive and emotional capacities (Brighouse, 2002; Feinburg, 1980; Warnick, 2007). For this reason children do not have the same liberty rights as adults.

In the context of welfare rights, prioritizing surveillance over privacy might appear to be a good trade off; however, when other rights are taken into consideration the picture is less clear. If we take into consideration what Eekelaar (1986, p. 179) calls developmental rights, which is necessary for children to learn how to exercise their liberty rights as adults, the need for children to have opportunities to make autonomous decisions becomes more clear. According to Warnick (2007),

> The exercise of a liberty right requires the ability to choose, and *the development of the ability to choose* requires an environment that allows children to learn about different possibilities of life and permits them to practice increasing levels of self-governance based on their own independent reasoning. (p. 323, italics added)

Closely tied to a students' developmental rights is the concept of privacy and the ability choose. Pedagogically privacy plays an important role in developing a healthy sense of identity as well as building a culture of creativity, innovation, and risk-taking (Adams, 2007). However, when children are under constant surveillance they do not have the opportunity to make decisions based on their own reasoning because they are encouraged to act however those in authority want them to behave. So in order to recognize a child's developmental

rights it is important that the child has real opportunities to independently make decisions, which can be hindered when under constant surveillance or supervision.

Based on a thorough ethical analysis of children's rights in relation to video surveillance in schools, Warnick (2007) offers 5 suggestions for how schools can use video surveillance technology in ethically sensitive ways which respect students' privacy and developmental rights. These recommendations for ethical practice include:

> *Minimization*: In order to protect a child's right to an open future, the use of video surveillance in schools should be minimal and only used when there is evidence of a serious problem.
>
> *Openness*: Policies regarding video surveillance, including where the camera are located and who has access to the information, should be open to public debate and scrutiny.
>
> *Empowerment*: Students, teachers, and parents should have access to video footage in order to defend their rights.
>
> *Transparency*: Students under video surveillance should be aware of the use of video cameras and the policies that govern them.
>
> *Erasure*: Due to the developmental nature of schools, video and digital records of students should be deleted as soon as possible. This prevents abuse and sends the message that growth and change is possible. (Warnick, 2007, p. 339, italics added)

A common theme found in the literature is to minimize the negative effects of surveillance technology through legal, procedural and technical initiatives. In *Ethics For the New Surveillance* for example, Gary Marx (1998) refers to the need for ethical practices to take into account new methods of collecting personal information such as drug testing, video

surveillance, electronic location monitoring, and Internet monitoring. Underlying his argument is a commitment to the dignity of person. He argues that the context of surveillance is important and that surveillance technology should be evaluated according to the means and conditions of data collection. He also proposes that the uses of data collection be considered as well. To help address these concerns, Marx offers 29 sensitizing questions that can be used to ethically assess surveillance practices. These questions emphasize the avoidance of harm, validity, trust, notification and permission for crossing personal borders. It is important to note that "as valuable as Marx's 29 questions are for their stated purpose, sensitization of practitioners ought not to be mistaken for the conscientisation of those *upon whom* surveillance is practiced" (Stoddart, 2011, p. 26). Moreover, ethical practice which largely emphasizes legal rights, may not necessarily negate all of the negative unintended consequences of surveillance technologies in schools.

The Electronic Surveillance of Students and Youth

While it has always been true that "to be a child is to be under surveillance" (Steeves & Jones, 2010, p. 187), the experience of childhood today is very different than past generations. In many places around the world, todays' generation of school children are emerging as one of the most heavily surveilled populations (Taylor & Rooney, 2017). Children now face an unprecedented amount of surveillance both at home and in their private lives, and for many of these children surveillance is inescapable. At birth fingerprints, footprints, blood samples, and mouth swabs containing DNA are collected. In infancy and beyond, youth are watched through video baby monitors and nanny cams. As children grow older and more autonomous surveillance is intensified through the use of GPS (Global Positioning Devices), RFID (Radio Frequency Identification) enabled clothing, Internet and

social media monitoring software, mobile phone tracking apps, home drug and semen tests, and even covert spyware. Some scholars have even gone as far as to suggest that surveillance is now a central feature of modern childhood (Fotel &Thomsen, 2004).

The literature has examined the proliferation of the surveillance of youth from a number of angles. Most of the early literature about the surveillance of children has been rights based, often focusing on the controlling, disciplinary nature of schools (Torres & Monahan; 2010) or legal and policy issues (Steeves 2006, 2007, 2009; Steeves & Webster 2008). The implications of electronically surveilling students and young people has been explored by a number of scholars including Taylor (2013),Taylor and Rooney (2017), Monahan and Torres (2009), Warnick (2007), Hope (2008, 2013), Gabriels (2016), and Marx and Steeves, (2010). Overall, the resounding message is that constant and intensive surveillance of youth is best examined through a critical lens as opposed a pragmatic one (Hope, 2015; Taylor, 2013). Questions concerning the increased normalization of technological surveillance of youth and the effect that constant surveillance has on young people's identity and social relationships are emerging in the literature (Taylor & Rooney, 2017), but there is room for much more work to be done in this area. Even with the recent surge of research that explores the surveillance of young people, there continues to be a lack of empirical research that specifically addresses social concerns, pedagogical issues, and surveillance technology's possible impact on child development.

Schools as sites of surveillance is nothing new. Historically there has always been an element of inherent surveillance practices in schools. Some of these common surveillance practices include the tracking of attendance, monitoring progress through exams and assessments, and creating school accountability through the reporting of standardized tests.

In recent years, the scope of school surveillance has become far more reaching. Not only have surveillance practices intensified, the introduction of new surveillance technologies has in some cases altered the nature of surveillance in schools, often shifting away from a surveillance of care and toward a surveillance of control and discipline.

Recently there have been a number of books written specifically on the topic of surveillance in the school setting. In *Selling Us the Fortress*, Ronnie Casella (2006) brings to light the close relationship between security companies and American public schools. In her book, *Surveillance Schools*, Emmeline Taylor (2013) takes a critical look at surveillance technology in schools, which is largely based on case studies of CCTV use in UK schools. Additionally, there are two noteworthy books, which contain compilations of papers written by prominent scholars in the field. *Schools Under Surveillance*, which is edited by Torin Monahan & Torres (2010), explores cultures of control in education. The commodification and disciplinary nature of surveillance in schools is explored through a number of topics including: schools as major markets for the surveillance industry, security cultures, resistance to surveillance, and surveillance as accountability in the form of tests, standards, and auditing. The newly published *Surveillance Futures* (Taylor & Rooney, 2017) is a complication of 14 papers that focus on the social and ethical implications of surveillance technology on youth. These papers are divided into three sections: Schooling and education, Self, body, and movement, and Social lives and virtual worlds.

A common theme in the literature is the use of the notion of the panopticon to describe the controlling and disciplinary character of electronic surveillance in schools (e.g. Dawson, 2006; Epling, Timmons, & Harrand, 2003; Gabriels, 2016; Steeves, 2016). Much of the literature which explores surveillance technology through the panoptic lens asserts that

the electronic tracking of students may negatively impact the educational environment (Dawson, 2006; Epling, Timmons, & Harrand, 2003; Steeves, 2016). In reference to LMS tracking systems that are used in nursing education, Epling, Timmons, and Harrand, (2003) express concern that student tracking "could be used to adopt a panoptic level of surveillance" and questions whether its use represents a breach of teacher-learner trust (p. 416). Along the same lines, both students and teachers interviewed for the MediaSmart research project "lament the ways in which panoptic surveillance invades the privacy of the classroom and detracts from the relationships of trust that are at the heart of learning" (Steeves, 2016, p. 137). It should be noted however, that there is a growing body of literature that recognizes the limitations of viewing school surveillance strictly through a panoptic lens.

Recently some scholars have moved beyond the panopticon metaphor in an effort to more fully understand the surveillance of youth (e.g. Gallagher, 2010; McCahill & Finn, 2010). Gallagher's ethnographic study (2010) suggests surveillance in schools is a departure from the panoptic norm because much of the supervision of children in primary school is discontinuous, and children have ample opportunities to avoid and resist monitoring. Other recent research has gone beyond the panoptic norm by exploring surveillance as a social practice. McCahill and Finn's (2010) research involving qualitative interviews of 13 to 16 year olds in three schools found that young people's experiences of surveillance differed according to their socio-economic status. Unlike their private school counterparts, students of lower socio-economic status reported that they interacted with police on a more regular basis and experienced more coercive forms of surveillance, such as police escorts home and having drinks seized. By considering the implications of surveillance technology beyond the disciplinary walls of the panopticon, new opportunities for exploring the surveillance of

youth have surfaced. Some examples of post-panoptic research that has surfaced in relation to the surveillance of young people, includes the ways in which surveillance in schools differ from other sites of surveillance (Warnick, 2007), self-tracking technologies (Gard & Lupton, 2017), the commodification of surveillance in schools (Casella, 2006; 2010; Hope, 2015), and resistance to surveillance (Weis, 2010). The examination of students' everyday experiences with surveillance technology also offers a range of possible new questions for researchers to explore.

Much of the literature recognizes the school as a unique site of surveillance. Not only is the school a place of development and growth, it requires a unique pedagogical relationship between teacher and child, which greatly differs from the relationships that exist in other public institutions (Warnick, 2007). Viewed in this light a number of scholars have explored how surveillance technology can disrupt the spirit of the educational environment by compromising trust (Rooney, 2010; Steeves, 2016; Taylor, 2010, 2013; Warnick 2007), privacy (Hirsch, 2010; Schropp, 2016; Steeves, 2016, 2017; Taylor, 2010, 2013; Warnick, 2007), risk taking (Warnick, 2007) and freedom of choice (Warnick, 2007; Williamson, 2017b). The literature has also recognized that because childhood is an important time of growth and development, surveillance technology may stunt the growth of moral development (Hargreaves, 2001; Gabriels, 2016; Warnick, 2007), confidence (Rooney, 2010), and autonomy (Hargreaves, 2001; Gabriels, 2016; Warnick, 2007). Although she does not directly address schools as sites of surveillance, Gabriels (2016) is very much concerned about the implications of surveillance for the healthy development of children. Gabriels introduces the notion of 'over-proximity' to explain the need for a framework to safeguard a critical distance between child and parent and urges parents to resist bubble

wrapping children and helicopter parenting. She warns that tracking apps "might create a situation of over- proximity, which deceives the parent into mistaking control for care" (Gabriels, 2016, p. 10).

In addition, the socializing role of schools has been explored by a number of scholars. Monahan and Torres (2010) view surveillance in schools as a form of knowledge production with surveillance shaping everyday activities and "reifying normative categories of appearance and behavior" (p. 7). Of concern is that children who are exposed to surveillance from a young age might become adults who are more likely to accept surveillance in other public institutions or even their personal lives (Warnick, 2007). Along the same lines, concerns about habituation to surveillance technology has been touched on by a number of scholars (Haggerty, 2006; Taylor, 2017; Taylor & Rooney, 2017; Warnick, 2007).

Resistance to surveillance practices by youth has surfaced as a reoccurring theme in the literature (Baron 2016; Hope 2016; Taylor & Rooney, 2017; Steeves, 2016; Weiss, 2010). Although there have been a few instances of student boycotts, widespread revolts are largely considered anomalies. Two exceptions are the Baldwin School walkout of 2005 which resulted in nearly 1500 students protesting the introduction of metal detectors (Weiss, 2010) and a classroom revolt against classroom management software which resulted in the teacher abandoning the system for the remainder of the semester (Joyce & Schmidl, 2009, p. 2). Despite these isolated reports, for the most part student resistance to surveillance technology is discrete and covert. Steeves (2016) reports that the youth in her study took steps to limit and avoid parental monitoring through techniques like clearing browser histories or using social media privacy settings (p. 131). Youth also resist electronic monitoring at school by sharing technical fixes to get around filters (Steeves, 2016, p. 135).

Somewhat related to resistance is sousveillance, which differs from surveillance in that it is not those in power who conduct the surveillance (Mann & Ferenbok, 2013). One of the most well-known examples of sousveillance is the videotaping of the Rodney King beating by a regular citizen and the subsequent turning over of that tape to local media outlets. With the proliferation of cell phones and other hand held recording devices sousveillance by students in schools is on the rise. Hope (2016) reported that in Australia students use pen cameras and iPhones to covertly record other students and teachers, and then subsequently post the videos online (p. 896). The publishing of online content by those being watched with the intent of exposing the 'watchers' can be considered a form a resistance because it represents an attempt to invert power relations (Hope, 2016, p. 296).

The use of surveillance technology for the purpose of self-tracking is another newly emerging topic in the literature (Gabriels, 2016; Gard & Lupton, 2017; Lupton, 2011; Rich, 2016). Self-tracking devices are usually wearable devices that are equipped with sensors which enable users to record and store data about their bodies, such as body mass index, calories burnt, heart rate and physical activity patterns. Common devices that are used by youth for the purpose of self-tracking include the Fitbit, Nike+ Fuelband, and Jawbone wristbands. When individuals engage in digital self-tracking of any kind (biological, physical, behavioral, or environmental) and use this data to create an image of oneself this is known as the "quantified self" (QS) (Swan, 2013, p. 85). QS technologies act as a 'surveilling other' by monitoring, evaluating, encouraging behavioral changes, and even disciplining the self (Gabriels, 2016). Research concerned with the self-tracking of youth and the quantified self is just emerging, but Gard & Lupton (2017) provide two guiding insights that relate to the digitization and electronic monitoring of student's health. Firstly, "school

health interventions are never solely concerned with the health of students" (Gard & Lupton, 2017, p, 36) and secondly "the amount of time, energy and resources that has been devoted to school health initiatives far exceed their measurable effect" (p. 37). Some possible areas for future research include examining the social repercussions of digitizing children's bodies and the possible ways in which these tools may shape and control the choices that youth make.

The following section explores the different kinds of surveillance technologies that are used to electronically watch over children both at school and in their private lives. Even though much of the literature that focuses on specific tools is largely descriptive as opposed to analytical or reflective, it is nonetheless worthwhile to provide an overview of the current state of the electronic surveillance of youth. It is also helpful to have a basic understanding of how these tools work and what the ethical implications might be for their use. To this end, literature about video surveillance will be summarized, followed by a summary of surveillance technologies that are used in schools to monitor and track the activities of youth on digital devices like computers, laptops, tablets, and cellphones. Lastly, newly emerging technologies which are not yet widespread will be discussed including: RFID systems, GPS, biometrics, and social media monitoring.

Video Surveillance Technology in Schools

Video surveillance technology in schools is typically comprised of closed-circuit television (CCTV) cameras, web cameras, and other recording technologies such as video cameras. Without question the use of surveillance cameras is on the rise. From 2001 to 2015, the percentage of American students who reported the use of security cameras at their schools increased from 39 to 83 percent (National Center for Education Statistics, 2016, p. ix). The same report indicated that video cameras were in 84 percent of high schools, 73

percent of middle schools, and 51 percent of primary schools (National Center for Education Statistics, 2016). In the UK the percentage of schools with CCTV technology is even greater. In 2012 it was reported that there were well over 100,000 CCTV cameras in secondary schools and academies across England, Wales and Scotland, with 90% of UK schools in the UK reporting the use of at least one video camera (Big Brother Watch Org, 2012). While it is difficult to know exactly how many video surveillance cameras there are in Canadian schools, it is safe to say that there is a growing trend in Canada as well (Steeves, 2016).

Much of the research about the use of video surveillance in schools is based on case studies of select populations. For example, Berg's (2016) qualitative research study explores how digital video cameras in a dance studio environment affects power relationships and teachers' pedagogical strategies. Berg's (2016) study is particularly relevant to educators because unlike most surveillance studies it directly addresses the pedagogical implications of surveillance. Interviews with ballet instructors reveal that the 'visibility of visibility' that comes with the introduction of video cameras shapes and directs ballet teachers towards certain pedagogical practices. This was the case even in situations where the new practices were not in the best interest of the student. Another example is Taylor's (2010) case study on the use of CCTV cameras in three secondary schools in Northern England, in which provides a critique of the disciplinary and controlling nature of surveillance in schools.

Despite the limited number of CCTV studies that have focused on the school environment, some overall trends can be reported. Video cameras are typically located in hallways, lunchrooms, storage rooms, and gymnasiums (Garcia, 2003; Taylor, 2010; Warnick, 2007). In the UK, the Association of Teachers and Lecturers (ATL) surveyed 249 primary and secondary school teachers and found that 77 percent of teachers reported

cameras used at entrances, 49 percent in corridors, 34 percent student communal leisure areas, and 7 percent in classrooms (ATL, 2009). It has been reported that for the most part video cameras are not used in washrooms or change rooms (Warnick, 2007), but this trend could be changing or may differ from country to country. Using figures obtained through freedom of information requests Big Brother Watch (2012) reported that more than 200 UK schools were outfitted with cameras in washrooms and/or change rooms, with a single school having 20 cameras in student washrooms and change rooms. While it has been reported that video cameras are not widely used in the classrooms, as far back as 2003 there have been reports that some teachers permit the use of webcams in their classroom so parents can watch their children at school (Toppo, 2003). With respect to video cameras in the classroom, two UK schools are testing teacher use of body video cameras to watch over students in the classroom (Vincent, 2017). In general, not all video surveillance cameras used in schools are visible to students. For, example one study involving 34 school districts in the United States, reported that 40 percent of the school jurisdictions had schools with hidden cameras and 87 percent of the school jurisdictions had a recording system of some type (Garcia, 2003).

Overall the effectiveness of surveillance technology to increase student safety is uncertain. Qualitative research suggests that students have a low level of awareness of CCTV cameras in school, and the reduction of misbehavior due to the cameras seems to be limited (Hope, 2009). This echoes the generally held view that CCTV fails to prevent crime (Gill & Spriggs, 2005). Most research on the effectiveness of CCTV cameras to increase safety has focused on public places other than schools such as parkades, shopping centers, and parks. In general however, the effect of video cameras in reducing crime in public places is inconclusive (Farrington &Welsh, 2003; Warnick, 2007). In a compressive meta-analysis of

22 studies in the United States and United Kingdom, Farrington and Welsh, (2003) concluded that 11 showed a desirable effect on crime, five showed an undesirable effect, while there was no clear evidence of effect in the 6 remaining studies. A major problem with these types of studies is that it is difficult to know whether crime was reduced overall or whether it simply moved to other areas. Based upon research in public places other than schools, there is some evidence that video surveillance is more effective in some contexts than others and more effective against some types of crime than others (Gill & Spriggs, 2005). For example, violent crimes such as physical and sexual assaults, are least likely to be influenced by the presence of video surveillance (Farrington & Welsh, 2003).

While there is little video surveillance research that specifically examines crime rates in schools, school administrator perceptions of the effectiveness of video cameras have been studied. Garcia and Kennedy (2003) report that 67 percent of school safety administrators believe that video cameras are 'effective' or 'very effective' at preventing or controlling crime. Of course displacement of crime to other places in the school or outside of the school that lack surveillance remains a concern. Furthermore, some perpetrators may actually want to be caught on video. The Virginia Tech shooter, for example, mailed video footage of himself to news outlets *before* his rampage, suggesting that in some cases video cameras might serve as an enticement for those seeking negative attention (Warnick, 2007).

There is some literature that is concerned with the ethical aspects of video cameras in schools. In Warnick's (2007) ethical analysis of surveillance cameras in schools he concludes that it makes a significant difference when surveillance is electronically mediated. A major concern is that as storage capacity for video footage increases so does the potential for abuse. In addition, this greater storage capacity and the permanency of records are problematic

because even though these records are only representative of a fraction of a students' identity, they are not always interpreted in this way. Warnick (2007) suggests that,

> Schools should be open to the possibility of student changes – that is, to the possibility that students can transcend their past images and archived data. The storage of past selves made possible by electronic surveillance might help to shut off future possibilities, at least symbolically. (p. 334)

Since schools are supposed to be a place of growth and development this idea of permanently freezing a student's action seems very contradictory to the goals of education.

Ethical considerations regarding video camera use not only have a direct impact on individual students but can also have broader implications for society at large. One concern raised by Warnick (2007) is that the use of video surveillance in schools may serve as a social precedent, influencing student attitudes towards privacy. For example, when children are exposed to video surveillance it is more likely that they will accept heavy-handed surveillance in public institutions as adults (Warnick, 2007). Furthermore, video cameras send a message of mistrust and represent a less than ideal way of problem solving.

Another significant societal concern is that specific groups may be targeted for surveillance in schools. A video surveillance study of the public streets in the UK reported that young male minorities where roughly twice as likely to be the object of surveillance compared to any other group (Norris & Armstrong, 1999). Additional research is required to know whether this also holds true in educational contexts. In addition, special consideration of the meaning that students attach to surveillance is important. For example some students may feel suspect while others may feel the cameras are there for protection. This is an important distinction that requires more attention in the literature.

While the existing literature regarding the use of video cameras in schools is helpful in providing a general overview of how video cameras are used in schools, much more work needs to be done if we are to fully understand the social and pedagogical implications of video cameras in schools. Possible future areas of study include the analysis of the experiences of students and teachers with video cameras, research concerning the perspectives of ethnic minorities, and further research on the pedagogical implications of the "unseen audience" in educational settings.

Surveillance of Youth on Digital Devices

Steeves (2016) reports that, "Canadian youth are among the most wired in the world and have fully integrated networked technologies into their schooling and social lives" (p. 125). For example, 95% of 17-year-old Canadians have a Facebook account (Steeves, 2014). Although it has been claimed that media coverage about the risks of using the Internet have been exaggerated and sensationalistic (Lawson & Comer, 2000; Monahan, 2006) these potential dangers cannot be ignored by parents and school officials who are responsible for the safety of young children and adolescent youth. While the dangers of the Internet is often the impetus that drives surveillance practices in schools, electronic surveillance of student activities are certainly not limited to monitoring online activities. Classroom management software for example not only monitors Internet use, it can be used to monitor all aspects of a student's computer activity right down to every mouse click and keystroke.

The surveillance of youth who use digital devices can be categorized into physical and virtual surveillance. Physical surveillance involves the physical presence of a parent, teacher, librarian, or even a student monitor to watch over the activities of other students. In schools, physical surveillance usually involves watching for suspicious activities such as

many students huddled around a single screen or a computer monitor that has been tilted to hide what it is on the screen. Virtual surveillance on the other hand, relies on computer-mediated observation tools such as Internet or social media monitoring software, classroom management software, spyware, mobile aps, or the tracking software that is built into a Learning Management System (LMS) such as Moodle or Blackboard. In addition, students who work on networked computers in schools can be monitored through system network administrators. For example, when students are required to authenticate into school computers with a password and username, network administrators can then monitor email and Internet behavior such as sites visited, including the amount and type of content downloaded. A major difference between physical and virtual surveillance is that, those who are monitored electronically may not be aware that they are being watched; however, when students discover that they are being electronically watched they tend to restrict their behavior (Dawson, 2006).

Internet Filtering and Monitoring Software

Although the main purpose of Internet filtering software in schools is to block unsafe or inappropriate content, many of these software packages now come with additional built in tools that serve to surveil the activities of children. Some programs contain integrated monitoring tools, which have the ability to record all programs used, keystrokes typed, web sites visited, and can take hundreds of screen captures every hour. For example, NetNanny has the capability to monitor the content of instant messages (IM) and activities in social networking sites such as Facebook. According to the NetNanny website, its reporting feature provides details about social networking profiles including friend lists, pictures, personal descriptions and more (NetNanny, 2017). Furthermore, many of these software packages

such as NetNanny, CYBERSitter, CyberPatrol, MaxProtect, and Parental Controls, have a stealth option, which makes the filtering and monitoring software invisible to users.

Civil liberty groups such as the National Coalition Against Censorship (NCAC) have expressed concerns not only about how Internet filtering software limits freedom of speech, but have also questioned Internet filtering software's educational value and effectiveness. In general, Internet filters have been reported to be crude and prone to error because of the way in which they categorize keywords without regard to its context and meaning. The number of over-blocks and under-blocks that is typical of Internet filtering software has led the NCAC to take the position that,

> censorship is not the solution and actually creates greater problems. The real solution is to teach children how to be media literate, to be responsible and to make educated decisions on how to participate and take advantage of the information age. (NCAC, 2017)

Civil liberty groups are not the only groups voicing concern about Internet filtering software in schools; this sentiment is echoed by teachers, librarians, and students. Teachers and students have complained that filtering software raises barriers to legitimate educational research and use of the Internet (Hope, 2005, 2008; Steeves, 2012b, 2016). In one survey, teachers report that Internet filters impede student research and discount the social aspects of learning by limiting collaboration outside of face-to-face opportunities (American Association of School Librarians, 2012). Overall, there is general agreement that filtering software is not 100% effective in protecting students from inappropriate content, and often blocks sites that contain educational content (American Association of School Librarians, 2012; Hope, 2005, 2008; Overaa, 2014; Rosenberg 2001; Schofield and Davidson, 2003;

Simmons, 2005; Steeves, 2012b, 2016).

Hargreaves (2001) asserts that overblocking compromises both the academic and moral development of children. This view is supported by the literature about the developmental rights of children, which state that in order for children to learn how to exercise their liberty rights as adults, they must first have opportunities to make autonomous decisions as children (Eekelaar, 1986). In addition, the debate about Internet filtering raises important questions about the development of student autonomy. Learner autonomy, or a student's ability to take charge of his or her own learning', is an important component of successful and effective learning (Kolb, 1984; Salomon, 1993; Vygotsky, 1962). Another emerging concern in the literature is how Internet filtering circumvents the need to trust students and can disrupt the spirit of the educational environment (Rooney, 2010; Steeves, 2016).

Critics of Internet filtering are equally concerned that the black list of banned web sites are produced by private Internet filtering companies with no input from schools. Many of these companies, such as CYBERsitter, Cyber Patrol, Net Nanny, and SafeSurf, do even not release their black lists upon request, claiming that they have a legal right to protect their product (Hope, 2008). This raises questions about the "hidden curriculum" of a technology that has been developed without input from school officials, teachers, and parents. Critics have expressed concern about the value laden hidden curriculum that is built into these tools. CYBERsitter for example has been accused of discreetly restricting free speech by knowingly and intentionally blocking websites that contain information about equal rights for gays and lesbians (Heins et al., 2006).

Classroom Management Software

Classroom management software is similar to filtering and monitoring software in the sense that it can be used to control the activities of students who are working on networked computers; however, there are many capabilities that are unique to classroom management software programs. The typical features of this software includes: the ability of the teacher to monitor student screens in real time, lock or take over student devices, launch an application on all devices, restrict applications that students can access, take screenshots of student screens, share the teacher's screen with students, restrict Internet access, send and receive files to and from students, and log off or shut down all student devices. Some examples of classroom management software programs that have been used in Canada include NetOp Vision, Lenovo LanSchool, NetSchool, and SMART Synch. In the UK the most common classroom management software programs are Impero, AB Tutor, and RN Education (Big Brother Watch, 2016). While it is difficult to gauge how widespread the use of classroom management systems are in Canada, Big Brother Watch (2016) reports that 72% of English and Welsh secondary schools use this software (p. 3). Based on the 1420 of the 3259 schools (44%) that responded to the Freedom of Information request, the software has been installed on over 821,000 devices (including computers, laptops, tablets, or mobile phones) with slightly over 1400 of those installed on student owned devices (p. 5).

Overall there has been very little independent research on the social and pedagogical impact of classroom management software in schools. In addition, there have been virtually no studies that specifically explores the experiences of students and teachers including how classroom management software may shape the educational environment. Most of the literature that does exist focuses on the practical application and use of classroom

management systems. One exception is a quantitative study which is available on the NetOp Vision website. The independent study focused on the effects of classroom management software on student grades for early college students at a mid-size community college (Joyce & Schmidl, 2008). Over a period of 2 semesters, data was collected from 104 students who were enrolled in an introductory computer course, 37 of which used classroom management software and 67 that did not. The average final grade of the CMS group was 0.85 while the average final grade of the unrestricted group was 0.79. The t-value t=2.36 shows that the difference between the 2 grade means are statistically significant. In addition, the distribution of grades for each group shows that the distribution of grades is significantly narrower for the CMS group (SD of 0.102 verses 0.15) and that fewer students in this group failed (11% verses 36%). Overall it was concluded that for this group of students classroom management systems improved students' final grades, resulted in less failures, and reduced the spread of grades for the population that was studied (Joyce & Schmidl, 2008). Although these results are promising, more research needs to be done to validate the claims of this study.

Classroom Management software companies have conducted their own research to support claims that their software helps students stay on task. A report from SMART Technologies suggests classroom management software boosts teacher productivity by reducing the time it takes for teachers to perform various administrative duties. The report titled *More Time to Learn,* (2008) is based upon a survey of 348 SMART Synch users. According to the report a teacher saves 14 minutes of class time per a typical 50 minute class. Although the report indicated the researcher was a statistical expert, this person was kept anonymous. In addition, there was no explanation regarding how research participants were selected, what the content of the survey included, or how the statistics reported in the study

were generated. So while these statistics appear to be very promising it is difficult to know exactly what the survey measured and whether the statistics reported accurately reflect the time saved in teachers' administrative duties.

While classroom management software may have a legitimate role in the classroom, civil liberty groups like Big Brother Watch (2014) have expressed concern about the increasing use of this software in schools. Big Brother Watch recommends limiting the use of this software in classrooms, but does not explain exactly what those limitations should entail. For Big Brother Watch the four main concerns about classroom management software are that these systems risk normalizing children to surveillance, these practices could lead to the monitoring of students on personal devices while outside of school, over-blocking hinders learning, and the main motivation for introducing classroom management software is not always connected to educational goals (Big Brother Watch, 2016, p. 4). The recent widespread adoption of Classroom Management Systems in the UK has been reported to be in response to England's *Counter-terrorism and Security Act (2015).* This legislation reinforces the schools' role in preventing young people from being drawn into terrorism and is intended "to equip young people with the knowledge and skills to challenge extremist narratives." (p. 49). It has been reported that as a result of this counter-terrorism legislation, Impero the most commonly used classroom management software in UK, has emerged as "anti-radicalisation software" in schools (Taylor & Rooney, 2016, p. 8).

Tracking Tools in LMS

Epling, Timmons and Harrand (2003) argue that the tracking tools that are built into a Learning Management System (LMS) such as Blackboard or Moodle, have brought the surveillance of online students to a more sophisticated and panoptic level. These tracking

tools permit instructors to view very detailed information about student activity such as: the first and last time the student accesses the course, the amount of time spent in the course, the number of times the student accesses a particular page, tool, or article, and the number of postings accessed or posted. In practice however it is important to note that just because tracking software exists, this does not necessarily mean that all teachers use these tracking features.

A small body of literature suggests that the use of tracking software has the potential to create panoptic effects (Boshier & Wilson, 1998), but little research has been done on how tracking software may effect student behavior and attitudes. One exception is a study of 30 early childhood students which found that surveillance measures impacted student behavior (Dawson, 2006). Students were surveyed on their awareness of two types of surveillance in their institution: the institution's Information Facilities Policy (network surveillance) and the online teaching system (LMS surveillance), which provides staff access to learning content and student activities. Students were also surveyed regarding the perceived degree of modification of their behavior in relation to their awareness of these modes of surveillance. Most students indicated that browsing behavior, range of topics, and writing style were influenced by various modes of surveillance. In addition, students who were unaware of surveillance further restricted their behavior after discovering they were subject to institutional surveillance. One explanation for this is that surveillance encouraged students to exercise self-discipline and to enforce their own forms of self-regulation.

Other research suggests electronic tracking of students in online courses provides important feedback for formative evaluation and course development. For example, information about how students navigate through an online course, including information

about which pages are accessed and how often, can be a resource for instructors to enhance future course design and learning activities. For example, Palloff and Pratt (2003) recommend monitoring discussion forum participation in order to gauge how students interact and use this information to enhance the online learning community for future offerings of an online course. Others suggest that surveillance could be used to identify students who might need additional scaffolding and support (Weaver et al. 2000). For example, Weaver et al. (2000) found that peaks in frequency plots of student groups returning for repeated viewings of content corresponded with student difficulties or ambiguities in instructions. In these examples it is clear that electronic surveillance was undertaken with the intent of helping students. Panoptic surveillance on the other hand arises when tracking tools are used to "police students" (Epling, Timmons, & Harrand, 2003). Defining an 'acceptable' level of electronic surveillance is difficult as it depends on one's philosophy of education and beliefs about the purpose of schooling. Some major considerations and possible areas for future research in this area might be who benefits from surveillance and who has the primary locus of control.

Radio Frequency Identification (RFID) Systems

The practice of using RFID technology to track and monitor youth in schools dates as far back as 2004 (Taylor, 2016). A RFID system consists of a microchip, reader, and database. In school-based RFID systems, the microchip is typically embedded in an ID badge, or sewn into a backpack or school uniform. In either case, the microchip is expected to be with the student at all times. Electronic readers then scan the RFID chip passively or actively. A passive reader requires the chip to be intentionally placed over a reader, whereas active readers constantly scan the chip from a much greater distance and provide real-time

information regarding the location of the chip. A database saves information that is collected from the RFID microchip including location, movements, and personal information such as name, photo, and other biometric indicators. In many cases, these systems can be set up to work with communication technologies such as email or text messaging systems, which can automatically notify parents about their child's activities.

The use of RFID systems to track student behavior is gaining momentum in many parts of the world. These systems have been used in Brazil (BCB news, 2012), the UK (Big Brother Watch, 2016), Japan, South Korea, Philippines, and the US (Schropp, 2016). While RFID systems are gaining momentum in many states in the US, in 2013 it was reported that only three percent of US schools were using RFID tracking systems at that time (US Today). Some countries such as England and the Philippines have conducted RFID trials, whereas in places like Brazil the use of RFID systems to monitor students is more widespread (Taylor, 2016). In Brazil, it is estimated that approximately 20,000 students are required to wear RFID chip embedded school uniforms in the hopes of reducing truancy through real-time parent notifications. For example, in Vitoria da Conquista, Brazil, when a student passes through the RFID sensors at the school entrance, the system sends a text message to parents (BBC News, 2012).

The reported benefits of RFID systems in schools, include "increasing the speed and accuracy of registration, heightened security, enabling the visual confirmation of attendance, and to ease data input for schools' behavior monitoring systems" (Taylor, 2013, p. 226). In the United States, however the introduction of RFID systems has come with considerable skepticism and resistance (Taylor, 2016). In the US there have been media reports of parental and student uproar in response to RFID systems. Due to parental disapproval, an elementary

school outside of Sacramento, California, abandoned their plans to introduce a RFID system (Kravets, 2012). In 2012, a teenager in San Antonio, Texas refused to wear her RFID chipped ID card and sued the school board on the grounds that the ID card contravened her religious beliefs. Another reason for skepticism is that RFID systems are particularly vulnerable to being hacked and could potentially endanger students if personal information is leaked without consent (Chowdhury & Ray, 2012). Others have expressed concern about the profound societal implications of RFID, arguing that these systems should never extend to tracking humans. In addition, Kevin Haggerty (2006) has warned that the normalisation of the use of RFID chips may take only one generation.

GPS Tracking

There are many applications of Global Positioning System (GPS) technology. In the context of the surveillance of youth, GPS technology is typically used to determine, track, and monitor the precise location of children of all ages. Adolescents can be tracked with GPS via applications installed on mobile phones or GPS enabled technology in vehicles. Preschoolers in Sweden wear GPS tagged clothing so that caregivers can keep track of and monitor their whereabouts (Fahlquist, 2017). More specifically, Fahlquist (2017) reports that Göteborgsposten observed that GPS tagged clothing has been provided to over 100 Swedish preschools (p. 122). GPS devices that are used to track children are increasingly marketed as wearable devices such as jackets, bracelets, clothing, watches, and shoes. Some of these GPS devices have been designed so that they cannot be removed by children. For example, Fahlquist (2017) reports that the Loku website states that their GPS device cannot be removed until it is deactivated by a parent (Lok8u, 2017). GPS tracking has been tested in the US as a part of anti-truancy programmes (Santa Cruz, 2011). According to the trackimo

website (Trackimo, 2017), a GPS trial to cut truancy in San Antonio and Baltimore resulted in attendance jumping on average from 77 percent to 95 percent. Interestingly, while these devices are often used to relieve parental fears, the use of GPS enabled ankle bracelets on newborns in a Belgium hospital was heavily critiqued for instilling fear in parents (Gabriels, 2016).

GPS technology is often used in conjunction with other technology such as mobile apps or biometric technology like iris or retinal scanners. For example, iris or retinal scanners on school buses can be used in conjunction with GPS technology to let parents know where their child is located while in transit to and from school. In addition, there are many mobile apps that utilize GPS technology and messaging or email systems to track and report the whereabouts of loved ones. For example, Gabriels (2016) has reported that one mobile app called 1TopSpy uses GPS technology to track children, employees, and even partners who may be suspected of cheating. Without the knowledge of the owner 1TopSpy can secretly track and monitor all activity of a target phone including the ability to track GPS location and "spy on text messages, web history, images, calls logs and spy call recording, spy on Whatsapp, Viber, Facebook messages, Snapchat, Line, BBM messages and much more." (1TopSpy, 2017). This covert use of GPS technology raises compelling moral questions about privacy and trust violation (Fahlquist, 2017; Gabriels, 2016; Rooney, 2010; Taylor & Rooney, 2017).

Biometric Surveillance

Another type of surveillance technology that has made its way into schools recently is biometrics. Biometric data is unique personal information about an individual's physical or behavioral characteristics that can be used to identify a person. Examples of biometrics that

have been reportedly used in schools include Galvanic Skin Response (GSR) Bracelets, and fingerprint, palm, retina, and iris scanners. In the UK and US fingerprint and palm scans are used to track and record attendance, to check books out of the library, and to purchase meals in school cafeterias (Marx, 2016). One school in Scotland is reported to require students to scan their palms to gain access to toilet facilities (Doyle, 2010). According to the Big Brother Watch report, *Biometric in Schools* (2014), an estimated 40% of schools in England are using this biometric technology, with more than 866,000 children that were fingerprinted in the academic school year 2012- 2013. In the US portable iris scanners, which resemble a pair of binoculars, are increasingly being used on school busses. (Hennick, 2013; Schropp, 2016). The student simply looks into the device then the system notifies the student and driver whether the student is on the correct bus. If used in conjunction with GPS technology it can also permit parents and school officials to track the location of students while in transit.

A newly emerging biometric surveillance technology that has been piloted in select schools is the Galvanic Skin Response (GSR) Bracelet. Galvanic skin response (GSR) bracelets such as the Affectiva Q Sensor and Empatica's e4 wristbands are readily available online and are currently being used to measure things like attention, engagement, anxiety, and stress by analyzing physiological and electrodermal activity. While these devices have many applications, their potential for use in educational settings is being explored. The Bill and Melinda Gates Foundation awarded a total of $1.1 million for two grants which were awarded to Clemson University and the National Center on Time and Learning to investigate the feasibility of Galvanic Skin Response (GSR) Bracelets in schools (Mayhew, 2012). According to Chris Williams, the spokesman for the Bill and Melinda Gates Foundation the purpose of the study was to "measure student engagement physiologically with Galvanic

Skin Response (GSR) bracelets… (and) determine the feasibility and utility of using such devices more broadly to help students and teachers" (Strauss, 2012). The foundation claimed that these biometric devices can serve to help teachers by providing real-time reflective feedback that teachers can act upon (Kroll, 2012).

The use of Galvanic Skin Response (GSR) Bracelets in schools is not without its critics. Some have pointed out that there are much cheaper and more effective methods for determining student engagement such as simply paying attention to student body language and actually talking to students (Dobson-Mitchell, 2012). Diane Ravitch, an experienced teacher and Professor of Education at New York University insists that she doesn't need bracelets to tell her when her students are bored, confused, excited, or tired. She says, "I know them as individuals with strengths, weaknesses, aspirations and dreams. I find this insulting… (its) another way to turn the art of teaching into an exact science…" (Strauss, para. 12). Ironically the very tool that is supposed to help teachers become more in-tune with their students, requires teachers to dislocate their attention away from students and instead focus on a pedometer like reader. For Giroux (2013),

> [i]t is not the vagueness of what this type of research is trying to achieve that is the most ludicrous and ethically offensive part of this study: it is the notion that reflective feedback can be reduced to measuring emotional impulses rather than produced through engaged dialogue and communication between actual teachers and students (para. 9).

In addition, scholars have expressed concerned about existing and new biometric surveillance practices which have not yet made their way into schools. Keenan (2016) predicts the increased use and application of newer forms of biometrics which measure heart rhythms,

brainwaves, DNA, body odor, and even gestures including how one walks, which is known as gait analysis. Biometric surveillance systems that utilize cardiovascular, respiratory, and pheromones sensors have already been tested in American airports to detect terrorist and criminal intent (van der Ploeg, 2009). Van der Ploeg points out that biometric surveillance practices raise important ethical questions about privacy, bodily integrity, including how these new practices "will inevitably lead to people having to justify their emotional and mental states" (van der Ploeg, 2009, p, 8). She also questions the scientific value of biometrics, asserting that the interpretive leap from heart rates and temperature to criminal intent is "hardly scientific" (van der Ploeg, 2009, 8). For van der Ploeg, biometrics is particularly problematic when bodily data is collected at a distance. She points out that, if it were a person as opposed to a machine gathering this type of personal information from someone involuntarily and without their knowledge, it would be considered completely inappropriate. Equally concerning is that with these biometric surveillance practices comes the exercise of power over individuals, especially when the collection of biometrics is required to access privileges such as such as welfare benefits or applying for asylum (van der Ploeg, 2003).

Social Media Monitoring Software

Social media monitoring software scours, analyzes, and categorizes the public social media posts that people make on public blogs, discussion forums, Facebook, Twitter, and Instagram accounts. This software is widely used by marketing and communication teams to identify trends, track competitors, understand customer interests, and improve branding. In Europe it has been reported that social media monitoring is done by law enforcement as a source of evidence against criminals, but these practices are still evolving (Trottier, 2016).

These tools have also been used by governments to identify possible terrorist threats. Recently, this technology has been repurposed by school officials in the United States to monitor students' personal social media posts that are made while they are in the privacy of their own homes. These tools analyze phrases and keywords that might suggest suicidal thoughts, cyberbullying, vandalism, drug-use, illegal activity, terrorism, and even obscenities. Anything that violates a school's student code of conduct and requires intervention can then be followed up on by school officials. In other cases these systems are used to protect the reputation of the school. For example, one social media monitoring company, Varsity Monitor, boasts on its website that it can be used by athletic departments to ensure that athletes adhere to their code of conduct and do not compromise the reputation of the institution (Varsity Monitor, 2017).

The literature about social media monitoring by schools is relatively sparse. In the United States, the legality of social media monitoring by schools has been examined by Catherine Mendola (2015) who noted that the lack of legal precedents by the Supreme Court makes "it is unclear whether schools may legally surveil students' internet posts in order to protect the school population from a substantial disruption to its educational goals" (p. 171). Shade and Singh (2016) provide an overview of four social media monitoring software companies that are marketed in the United States including Geo Listening, Varsity Monitor, Snaptrends, Digital Fly. In their analysis they touch on policy implications and ethical issues related to monitoring students' public social media activities, largely focussing on issues of privacy and freedom of speech issues. Another concern that has surfaced in the literature pertains to how the data collected through social media monitoring software could follow youth into adulthood, affecting many areas of their life including education, employment,

health care, and financial services (Shade and Singh, 2016).

Conclusion

The current body of surveillance studies literature provides a good starting point for the development of a theoretical framework concerning the electronic surveillance of youth, however these theories can only serve us so far. Discourse about the security-privacy debate and the economic case for introducing surveillance technology in schools is valuable, but it does not even scratch the surface when it comes to understanding all of the social, ethical, and pedagogical implications of surveillance practices in schools. Lyon (2007) suggests that in order to fully grasp the varied, complex and nuanced nature of surveillance, scholars must focus on specific 'sites of surveillance' such as schools (p. 25). Not only is the surveillance of young people very different than the surveillance of adults, the context of surveillance in schools differs greatly from other places. Even with the swell of recent research concerning youth and surveillance, there is room for additional work that specifically focuses on youth and schools as sites of surveillance.

The co-constituting nature of surveillance technology and the resulting unintended consequences have been largely neglected in the existing surveillance study literature. These consequences remain to be attended to, documented, and considered within the broader vision of the purposes and purview of education. This requires looking beyond the technology itself and delving into the everyday experiences of teachers and students as they encounter and use these tools in schools. Thoughtful reflection on such everyday experiences with surveillance technology has the potential to reveal what might otherwise go unnoticed, including how surveillance technology may be subtly or significantly modifing and transforming how the world is experienced. Positioning surveillance technology in alternate

theoretical spaces not only prompts new questions, it may also generate new ways of critically examining and evaluating the role of surveillance technology in the lives of youth.

Chapter 3: Methodology

Theoretical Framework

The theoretical framework for this study is largely informed by literature and research within the field of Ethics of Technology. This field, which is a subdiscipline of Philosophy of Technology, did not fully develop until the twentieth century. One possible reason for this is the general perception that, since technology extends human capabilities, it inevitably represents progress and improves the human condition (Franssen, Lokhorst, & Van de Poel, 2009). This instrumental view of technology perceives technology as neutral and attributes any undesirable consequences of technology to the user rather than the technology itself. The common slogan, "guns don't kill, people kill", is representative of this view. In the twentieth century, however the neutrality thesis fell to sharp criticism from scholars from a range of disciplines and backgrounds. This includes scholars of a general outlook (Feenberg), those with a background in law (Ellul), political science (Winner) and literary studies (Borgmann). Much of this literature points to ethical concerns that are raised when technology is viewed through a strictly instrumental lens. Ellul (1964) for example strongly rejects the rational instrumental view because it reduces all aspects of human life to maximum efficiency and neglects other important fundamental human categories. Heidegger's (1977) rejection of the instrumental view of technology, while similar to that of Ellul's, largely revolves around ontologically based considerations.

In order to understand the essence of technology, Heidegger (1977) asserts that we need to move away from the "ontic" and toward the "ontological". For Heidegger the essence of technology is potentially dangerous because it prevents us from understanding our own essence as beings, who are capable of conceiving the world in multiple ways. According to

Heidegger, technology is a way of thinking that calls us to seek efficiency for its own sake and leads humans to view themselves as orderers of everything. As a result, our entire world, including the people in it, becomes merely a resource to be used. In this way, modern technology reveals a world in which everything becomes a "standing reserve" waiting to be used. Accordingly, Heidegger challenges us to question technology and move beyond this technological attitude so that we can escape the instrumental mindset and call on other human values. The ability to see past the instrumental view of technology is a critical starting point for understanding how students and teachers experience surveillance technology in schools, because the instrumental mindset feeds the taken-for-granted attitude that glosses over our unexamined values, beliefs and assumptions about the nature of technology.

Phenomenology in a Posthuman World

The postmodern world in which we live is in continuous flux. With the dawn of this new world also comes the posthuman. For many, the term posthuman conjures up images of a cyborgian future, a world of unlimited possibility where human minds can be downloaded into computer networks. While it is easy to dismiss these visions as the stuff of fantasy and science fiction, there is no denying that as we become more dependent on technology, the boundaries between human and machine become increasingly blurred. However, this does not imply that technology will inevitably take over our humanity rather,

> far from surpassing or rejecting the human [posthumanism] actually enables us to describe the human and its characteristic modes of communication, interaction, meaning, social signification, and affective investments… It insists that we attend specificity to the human - its ways of being in the world, its ways of knowing, observing and describing… [The posthuman] is fundamentally a prosthetic creature

> that has coevolved with various forms of technicity and materiality, forms that are radically ‘non-human' and yet have nevertheless made the human what it is. (Wolf, 2009, p. xxv).

This is a significant shift in thinking. The posthumanist perspective does not view technology as objects out there, just waiting to be used. Rather much like phenomenology, it recognizes man's co-constituting entanglements with technology.

In their *Researching a Posthuman World*, Adams and Thompson (2016) point to phenomenology as a research method that is compatible with the posthumanist perspective. Like phenomenology, the posthuman perspective recognizes the powerful co-constituting relationship between humans and their technologies. Posthumanism reconceives our relationship to technology and intends to shatter the commonly held separation between humans and their technologies. In this new human-technology-world relation, the traditional boundaries between subject-object and active-passive dissolve and take on new complexities. Posthumanism recognizes the human-(surveillance)technology-world web of relations is complex and multilayered. It is not a simple matter of humans creating technology then reacting and adapting to their creation, rather there is a continuous and reciprocal interrelation whereby each co-shapes and co-constitutes the other. In this way, both postphenomenology and posthumanism enables us to think about the human-(surveillance)technology-world relationship in a more wholistic way bringing to light new insights and perspectives.

The theoretical framework of posthumanism is helpful for studying the ethical implications of surveillance technology in schools, because it “seeks to correct some of the anthropocentric biases that have dogged humanist perspectives... (such as) the belief that we

are autonomous beings who are unambiguously separated from our tools" (Adams & Thompson, 2016, p. 2). In addition, posthumanism recognizes that,

> [d]rawing such unambiguous lines in the sand only serves to cover over an unexamined belief in humanity's dominion over technology, and positions material objects as benign, neutral, and subject to our moral whim and disposal. In the process, crucial questions concerning technology and its complex impacts on our personal, professional, social, cultural, political, spiritual, and ethical selves and practices are silenced. (Adams & Thompson, 2016, p. 108).

By disclosing man's co-constituting entanglements with technology, unique ethical challenges can rise to the surface. By attending to experiences with surveillance technology through a posthuman and phenomenological lens, this study attempts to bring to light some of the ethical tensions that surround the use of surveillance technology in schools.

Phenomenology

Originating from the seminal work of Edmund Husserl (1970), phenomenology aims to reconnect with the world by attending to concrete, prereflective human experiences. Similarly, "posthumanism addresses our intimate and co-constitutive entanglements with our technologies as well with the natural, pre-given world and its creatures" (Adams & Thompson, 2016, p.14). Central to phenomenology is the notion of "lived experience", that is, the way in which we *experience* our lifeworld, prereflectively, in the immediacy of the now. "Lived experience is the name for that which presents itself directly--unmediated by thought or language....[it is] experience that we live through before we take a reflective view of it" (van Manen, 2014, p. 42). Thus phenomenology "attempts to match reflection to the unreflective life of consciousness" (Merleau-Ponty, 2012, p. xx). Ultimately, the goal is to let

the things of the world “speak for themselves” (Heidegger, 1982). This means that, as much as possible, theoretical preconceptions and preunderstandings of the lived experience must be pushed to the side and stripped away so that we can, in Husserl's (1970) words, return “to the things themselves” (p. 168). Phenomenology’s constellations of methods assist the researcher in accomplishing this epoché-reduction (e.g. the stripping away and return to the things themselves, respectively). Over the decades, the original phenomenology of Husserl has continued to evolve both as a philosophical movement and research tradition (Adams & Thompson, 2016). The postphenomenology of Don Ihde (1990) for example, recognizes the powerful mediating role of technology and reconceptualizes the phenomenological human-world relation as a human-technology-world relation.

Postphenomenology

The study of technology is nothing new to the discipline of phenomenology; in fact all the major phenomenological thinkers have addressed technology in their work (Rosenburger & Verbeek, 2015). For example, the human-technology-world relation has been addressed in terms of consciousness (Husserl), perception (Merleau-Ponty), and being-in-the world (Heidegger). Postphenomenology differs from the traditional phenomenological analyzes of technology in that it represents move away from the often dystopian and ‘transcendental’ grand narratives of technology, representing a move toward a more grounded empirical analysis which focuses on the nature of the human-technology relationship (Introna, 2017). Building on phenomenological philosophy and methods, the postphenomenology of Ihde (1990) addresses practical problems, is empirically orientated, and emphasizes embodied and situated perspectives (Rosenberger & Verbeek, 2015). In this way postphenomenology opens up a useful way to examine the co-constituting role of

technology in our lives.

Postphenomenology is essentially a phenomenology of human-technology-world relations, or in the context of this study the human-(surveillance)technology-world relation. Like phenomenology, "its technology-focused offspring, postphenomenology, offer(s) promising qualitative approaches for unearthing how *specific* technologies may be reforming and transforming experiences and knowledge construction in education" (Adams & Turville, forthcoming 2018). The postphenomenology of Ihde (1990, 2009) is particularly useful for understanding human-(surveillance)technology-world relations. According to Ihde (2009), postphenomenology "is a modified, hybrid phenomenology [that] with the emergence of the philosophy of technology …finds a way to probe and analyze the role of technologies in social, personal, and cultural life" (p. 23).

Postphenomenology does not follow a strict methodology; however, all postphenomenological studies have certain things in common. First and foremost however, the process of "*doing* postphenomenology must maintain a significant and meaningful alliance with its progenitor, phenomenology" (Adams & Turville, forthcoming 2018). Rosenberger and Verbeek (2015) outline the commonalities of postphenomenological research in *Postphenomenological Investigations.* Firstly, Rosenberger and Verbeek (2015) make note that in postphenomenological studies there is an emphasis on the human-technology-world relationship. Secondly, phenomenological reflection is based on what Rosenberger and Verbeek call an "empirical account" which is based on an experiential encounter with technology. Third, it investigates the co-constituting nature of the human-technology-word relation. Lastly, based on the last three elements, Rosenberger and Verbeek (2015) note that postphenomenological studies tend to analyze the implications of human-

technology-world relations either epistemologically, politically, aesthetically, or ethically. Thus the central questions of postphenomenology point to "how technologies help shape knowledge, politics, aesthetic judgments, normative ideas, religious experiences, etcetera" (Rosenberger &Verbeek, 2015, p. 31). In this way, postphenomenology can open up ethically charged questions that reach far beyond the immediate experience itself. As such, postphenomenological insight may "may serve in promoting more critically circumspect applications of different technologies in pedagogical settings, and in advancing a long-overdue revision to our taken-for-granted assumptions and practices with technologies in education." (Adams & Turville, forthcoming 2018).

Ihde's human-technology-world relations

As a methodology, postphenomenology is concerned with deep reflection on concrete technological encounters and the application and analysis of Don Ihde's body of thought (Rosenberger, 2014, p. 375). Ihde (1990) asserts that when we relate to the world through technology, the nature of the human-technology-world relation is transformative and actional. In Ihde's study of technics (1990), he distinguishes four types of human-technology-world relations which provide direction for postphenomenological analysis. Adams and Thompson (2016) point to these human-technology-world relations as a heuristic for "discerning the spectrum of human-technology-world relations" (p. 39).They assert that this heuristic is particularly helpful for critically examining how technologies mediate our perceptions, ways of knowing, and actions. While Ihde's (1990) human-technology-world relations are not exhaustive, they are very methodologically helpful for analyzing human-(surveillance)technology-world relations. The following section provides a summary of each of Ihde's (1990) four human-technology-world relations including embodiment, hermeneutic,

alterity, and background relations.

Embodiment Relations

When a technology is "embodied" our experience is reshaped through and with the device. Embodiment relations occur when a technology transforms our perceptual and actional engagement with the world. Eyeglasses and the blind man's walking cane are examples of embodiment relations. When these devices are used they become extensions of our corporeal self. The embodied relationship is characterized by a sense of transparency because the technology slips silently into the background. Ihde writes, "my glasses become part of the way I ordinarily experience my surroundings; they 'withdraw' and are barely noticed, at all" (1990, p. 73). Similarly when a teacher or principal watches students through the interface of a screen, immediate attention is focused on the act of watching while the technology itself fades into background. This is similar to how when a keyboard is used to type a message, our immediate attention is not on our fingers or the keyboard itself but rather the message that is being typed.

Adams and Thompson (2016) observe that in order for the transparency of a device to be possible, we must first become habituated to it. They use the example of driving a car, whereby an experienced driver no longer needs to "think" about driving. Quoting van Lennep, they remind us that unlike a new driver, the experienced driver,

> forms a unity with his car, that is to say his car becomes part of his body….The driver is as wide as his car. He does not "measure" whether or not he can pass through a space, but "feels" it after a while. But he feels it only insofar and for as long as he sits behind the wheel. (van Lennep, 1987, p. 143)

Yet, of course we know that a driver can never fully incorporate a vehicle. "Even in the midst

of our most perfect embodiment relations with a technology, [the technology] remains always other than me. It resists full incorporation" (Adams & Thompson, 2008, p. 60).

Hermeneutic Relations

The hermeneutic relation involves the use of a device that must be interpreted or "read" for meaning; therefore, there is an element of both perceiving and interpreting the device. Ihde (1990) provides the example of the thermometer, which is only useful if we understand how to read the device and interpret meaning from it. Thus knowing a technology's unique "language" comes into play with the hermeneutic relation. In the example of reading a thermometer outside a window, it is possible to know whether it is hot or cold outside without actually feeling the temperature on one's skin. In this way, hermeneutic relations can inform us about the world but also distance us from worldly experience. Similarly, when a teacher electronically peers into a student's virtual world through classroom management software, the teacher's immediate attention turns to the content of the screen and away from the actual students that the teacher is checking up on, in a sense distancing the teacher from the students whom she is watching. By drawing attention to the ways in which surveillance technology alters what teachers sees, the hermeneutic relation can reveal much about the unintended and unexpected consequences of using these tools to watch over youth.

At this juncture it should be noted that none of Ihde's technology relations are mutually exclusive. For example, hermeneutic relations can also involve varying degrees of embodiment relationships. Such as when we engage in the hermeneutic relation of reading or of using a piece of software, while also engaged in the embodiment relation whereby the mouse becomes an extension of one's hand. (Adams & Thompson, 2016).

Alterity Relations

In phenomenology, alterity often points to the experience of engaging with another human being or an encounter with the Other. In postphenomenology however alterity points to the experience of engaging with a technology. In alterity relations the world is not experienced through a technical device as in the embodiment relation, rather alterity relations occur when a technology takes on a life of its own, or a "quasi-other" quality. Some examples would be toy pet robots or avatars whom we might give nicknames and may even get attached to. Alterity relations are also at play when a technology is unfamiliar. For example, when a new cell phone feels foreign we may experience the phone as "other". Similarly, the alterity relation can be experienced when a technology abruptly breaks. In this case alterity relations, point to how a technology shows up, not as a seamless extension to oneself or as an interpretive support, but as unintelligible or other than me (Adams & Thompson, 2016). The alterity relation is useful because by paying close attention to what transpires when surveillance technology breaks down or malfunctions, this can provide insight into how this technology may shape pedagogical practices and alter relationships in the classroom. This is especially true in cases where one unknowingly becomes over reliant upon technology and only recognizes his or her dependency on it when the technology breaks down.

Background Relations

In background relations technologies which we do not directly use forms the background for our perception of the world. Background relations include the types of indirect interactions that we have with devices that make up our environmental context. We have such a relation with heating and air conditioning systems that automatically go on and

off throughout the day. We also have this relation with the CCTV security cameras that silently watch over us when we take money out of an ATM machine or ride public transit systems. Background relations are absently present in everything we do. They function transparently and operate virtually unnoticed in the background. Adams and Thompson (2016) note that the background relation "could also be called a non-focal embodiment relation, since these relations all variously enhance and extend our perceptual and actional possibilities" (p. 45). They also suggest that background relations can also be thought of as "interpassive" (p. 64). Interpassivity stands in contrast to interactivity, and denotes the human-technology-world relation whereby we hand over work to a machine to perform in our stead or absence. An obvious example of this would be when work is outsourced to a machine. Using the example of the fireplace or kitchen hearth, Borgmann (1984) makes note of how the disburdenment of the menial task of chopping wood has resulted in the loss of meaningful social ties that develop when a family congregates around it for warmth. Another example of a background relation is, when the responsibility for supervising students is outsourced to CCTV video cameras. When the interactivity of the teacher or school principal is replaced by interpassivity, this may impact the social ties between teacher and student because, like in the case of Borgman's kitchen hearth, opportunities for spontaneous conversation with students may be reduced. These overlooked spontaneous casual conversations which often happen during the supervision of students is an integral part of building and establishing rapport with students.

Human-Technology-World Relations Summary

It is important to note that for Ihde (2003) embodiment is not only perceptual and actional, but also culturally endowed. In *Technology and the Lifeworld,* Ihde (1990)

distinguishes between microperception (sensory bodily being) and macroperception (hermeneutic cultural context), reminding us that while these two perceptions are analytically distinguishable, they coexist simultaneously and are very much intertwined (p. 29). “There is no microperception (sensory-bodily) without its location within a field of macroperception” yet it is also true that “there is no macro perception without its micropercerptual foci” (Ihde, 1990, p. 29). As such perception is both embodied and situated; and it is the hermeneutic perspective which allows us to transpose between the two positions (Ihde, 1990, p. 87).

To summarize, postphenomenology offers not only a perspective that is useful for exploring the human-(surveillance)technology-world relation, it also permits us to explore the political, social, ethical implications of surveillance technology in schools. Even though the application of Ihde’s work is very evident in my postphenomenological analysis in Chapters 4 and 5, Ihde’s (1990) technical relations are not always explicitly referenced (as not to distract from the phenomenological meaning of the text). The conclusion in Chapter 6 however makes reference to Ihde’s technical relations and speaks directly to how the postphenomenology of Don Ihde has informed this study.

A Postphenomenology of Practice

While postphenomenology is very helpful in terms of providing direction and focus for analyzing human-(surveillance)technology-world relations, the phenomenological methodology for this study is largely informed by Max van Manen's (2014) “phenomenology of practice”, which is elaborated on in the following section. Since I am using van Manen’s phenomenological research methods to study human-technology-world relations, I have opted to follow Adams and Turville (forthcoming 2018) lead and refer to my methodological approach as a “*post*phenomenology of practice”. Adams and Turville (forthcoming 2018)

assert that in doing postphenomenology, researchers "must maintain a significant and meaningful alliance with its progenitor, phenomenology" (Adams & Turville, forthcoming 2018). In phenomenology, prereflective or "lived" experience is the original site of meaning and the starting point from which meaning is gleaned. As such the term *lived experience* holds exceptional methodological significance for phenomenology beyond how it is sometimes interpreted more loosely by other qualitative methodologies. To study lived experience means to "explore *directly* the originally or prereflective dimensions of human existence: life as we live it" (van Manen, 2014, p. 39). In this inquiry, the meaning of surveillance technology in schools is found through phenomenological reflection on the prereflective experiences that teachers and students have with surveillance technology. In capturing these lived-through experiences in writing the aim is "to *show* how meaning reveals itself" (van Manen, p. 48, italics added). This is not an easy task. It requires reflective attentiveness to the lifeworld, and the ability to linguistically express meaning as it is given in the now.

Max van Manen (2014) describes phenomenology of practice as a method of "abstemious reflection on the basic structures of the lived experience of human existence" (p. 26). This means that while reflecting upon a lived experience, the phenomenological researcher must abstain from the temptation to theorize, predict, or provide explanations. While it is true that some phenomenologists speak of phenomenological explanations (Lingis, 1986, p. 19) and phenomenological theorizing, van Manen (2014) points out that "the terms explanation and theorizing do not refer to the question of 'why' (or) the 'causes' of phenomena, but rather how certain phenomena appear in consciousness" (p. 67). As Merleau-Ponty puts it, "it is a matter of describing, not explaining or analyzing" (Merleau-

Ponty, 1962, p. viii). In this sense, phenomenology is about letting a phenomena speak for itself. Similarly, for Heidegger (2010) phenomenology means,

> to let what shows itself be seen from itself, just as it shows itself from itself. That is the formal meaning of the type of research that calls itself, 'phenomenology'. But this expresses nothing other than the maxim formulated above: To the things themselves! (p. 32).

Van Manen (2014) also describes phenomenology as "an inquiry that involves a dynamic play of showing and hiding" (p. 28.). The very thing that phenomenology aims to show is what is commonly hidden or concealed. Yet ironically what is hidden is quite often the very thing that constitutes its phenomenological meaning. This interplay of showing and hiding is particularly relevant for understanding teacher and student experiences with surveillance technology in schools. Surveillance technology, like all technology, carries with it unknown, unpredictable, unintended intentionailities, many of which can go completely unnoticed. It is the job of phenomenology to reveal these unintended intentionailities, but in this unveiling the goal is not to provide "answers". Rather the intention is to challenge our understanding of the world and provoke a deeper awareness of the world in which we live. In this sense, phenomenology is more about questioning than answering.

Much like Verbeek's (2015) "methodological ambitions for postphenomenology, a postphenomenology of practice is grounded in the philosophical analysis of empirical data" (Adams & Turville, forthcoming 2018). As such, a postphenomenology of practice involves a dynamic interplay between "the *prereflective* (the natural attitude) and the *reflective* (the phenomenological attitude), which roughly corresponds to the familiar division employed in empirical research between data collection and data analysis" (Adams & Turville,

forthcoming 2018). In this study, prereflective data consists of lived experience descriptions, which were gathered through interviews and written accounts by teachers and students (the research participants). Reflective analysis was conducted through techniques of thematic and existential analysis, and via the application of the phenomenological methods of the epoché and the reduction (e.g. van Manen, 2014). In the postphenomenological analysis which follows in the following chapter, there is a consistent pattern of presenting prereflective insight (in the form of anecdotes which were captured from LEDs) followed by postphenomenological reflection. This pattern of anecdote-reflection is very much modeled after Max van Manen's phenomenology of practice (2014).

Research Participants

The participants in this study included teachers who taught with classroom management software and university students who had experience being watched by teachers using classroom management software while they were students in the K-12 system. A total of ten teachers were interviewed, seven of those teachers taught Business, Administration, Finance & Information Technology (BIT) or Media, Design & Communication Arts (MDC) courses in secondary schools, two teachers taught English and/or Social Studies (and often taught in a computer lab with CMS for special projects), and one teacher taught in a post-secondary institution. Seven of the teachers interviewed used classroom management software daily, and three teachers used the software on a semi-regular basis. For example some teachers used the classroom management software only for exams, activities which required limited Internet access, or for special in class assignments/projects which required access to computers. All of the teachers reported to use classroom management software to manage student behavior and to keep students on task. Two of the ten teachers reported that

most of their communication with students was done electronically through the classroom management software or other electronic means (note: this self-report was not quantified in any way).

A total of eight university student participants were interviewed (all of whom had experience being watched by teachers through classroom management software while they were students in the K-12 system). Seven of those students reported to have had experienced classroom management software in a secondary school setting and one in an elementary school setting. All of the students' experiences with classroom management software involved the use of networked computers in either a library or a school computer lab setting. The majority of the students experienced classroom management software in Business, Administration, Finance & Information Technology (BIT) courses or in Media, Design & Communication Arts (MDC) courses.

Data Collection: Gathering Lived Experiences Descriptions

A phenomenology of practice does not ascribe to one set method for gathering accounts of lived experience. Phenomenological research data can be collected from a number sources such as recounting one's own personal experiences, interviewing others, close observation, tracing etymological sources, searching idiomatic phrases, literary and artistic works that portray experience material, and consulting other phenomenological works (van Manen, 1997). In this study the primary method of capturing teacher and student lived experiences with surveillance technology in school was through hermeneutic phenomenological interviews. Interviewees were also invited to write down their recollections of specific experiences with classroom management software. The interviews and written accounts were then subsequently culled for lived experience descriptions (LEDs).

As Adams and Turville (forthcoming 2018) describe, "in a postphenomenology of practice interview, the primary purpose is to elicit lived experience descriptions (LEDs) about the research participant's everyday engagements and encounters with the technology of interest." The ultimate goal is to construct anecdotal accounts of these experiences that can be used to reveal underlying patterns and structures of meaning.

Through in-depth phenomenological interviews of high school teachers and students, I captured experiences with surveillance technology in schools in the form of lived experience descriptions. Van Manen (1997) recommends that prior to interviewing the researcher be "oriented to one's question" (p. 68) and suggests focusing at the level of the concrete experience. Interview questions were intentionally devised so that participant recollections of experiences with surveillance technology in schools would provide concrete insights into their experiences with surveillance technology in schools. I emphasized the concrete experience of surveillance technology by asking questions such as: "Tell me about a specific time when…", or "Can you remember a time when..." If during the interview participants started to speak in generalizations I brought them back to the concrete by asking questions to help participants focus on specific aspects of their experience such as corporeality, spatiality, and relationality. In order to focus on what is unique about the experience of watching and being watched electronically, I also asked participants what their experience was like when classroom supervision was not mediated by technology. This is important because knowing what a phenomenon is *not* can bring us closer to what it *is.* This method, which compares the phenomena with other related but different phenomena, is known as the eidetic reduction (Adams, 2008) or a dimension of the reduction proper (van Manen, 2014). Adams and Truville (2018) have pointed out that, "readers familiar with the

vocabulary of postphenomenology will recognize the eidetic reduction as similar to variational method or analysis used to uncover the multistabilities of a given technology" (p. 25).

Insight Cultivators

Another source of data that is commonly used in a phenomenology of practice are insight cultivators. Van Manen (2014) describes "insight cultivators [as] sources for thematic insights" which may be found in "reflective writings of philosophers, and other scholars of the arts, humanities, and human sciences" (2014, p. 324). Insight cultivators bring us closer to the phenomenological meaning of an experience by serving as a phenomenological example or metaphor. In Chapter 5, I draw on several examples from literary works that provide insight into the various aspects of the experience of watching and being watched. For example, Sartres's reflection on "The Look" (1993) was used to glean an existential understanding of what it means to be watched by another. In *Discipline and Punish,* Foucault (1979) provided insight into the experience of being watched via the all-seeing panopticon.

Phenomenological Analysis and Reflection

As mentioned previously the lived experienced descriptions that were gathered through interviews and written accounts were culled and used to construct "anecdotes". An anecdote is a short, concrete, descriptive narrative of an everyday experience which points to a specific incident. A powerful anecdote "simultaneously pulls us in but then prompts us to reflect" (van Manen, 1997, p. 121). The goal is never to represent every possible scenario by using as many different anecdotes as possible. Rather the intent of the anecdote is to bring to light the very thing(s) that makes the experience with surveillance technology in schools

unique. “The paradoxical thing about anecdotal narrative is that it tells something *particular* while really addressing the *general* or u*niversal*” (van Manen, 1997, p. 120). These particular and universal meanings can often be expressed and understood in terms of a phenomenological theme. Thematic analysis refers to the “process of recovering the structures of meanings that are embodied and dramatized in human experience represented by the text” (van Manen, 2014, p. 319). This interpretative process involves identifying themes, which define the experiential structures that represent the phenomenon and its unique lived through qualities (Adams, 2008). As such, phenomenological theme analysis differs greatly from other research models such as grounded theory, ethnography, and concept analysis.

In *Phenomenology of Practice,* van Manen (2014) describes in detail the process of recovering phenomenological themes through rereading text and draft writing. His approach for uncovering phenomenological themes is to thoughtfully reread a text (i.e. a lived experience description, fictitious literature, or phenomenological description) in a wholistic, selective, and detailed manner. This is done by asking whether the text as whole points to an eidetic or phenomenological meaning of the experience, and then translating and expressing that meaning in the form of a thematic statement. The selective reading approach then seeks to single out statements from the original text that are particularly evocative, possess a sense of punctum, or are essential for revealing phenomenological meaning. Any statements that capture the phenomenological meaning of the theme are then culled to become part of the phenomenological theme. The detailed reading approach involves looking at every single sentence to capture thematic expressions that let the experience show itself in the text. Anything that does not reveal the phenomenological meaning of the theme is removed.

On the surface the process of thematic analysis may appear to be a very clear cut process because it involves the systematic rereading and editing of a phenomenological description or text. However, simply following the prescribed steps for phenomenological thematic analysis will not guarantee that thematic phenomenological insights will necessarily emerge. Unlike other common qualitative research methods, phenomenological theme analysis goes beyond mere categorization. Instead themes are used to represent various structures of the lived experienced that allude to or point to some aspect of the phenomenon. As such "grasping and formulating a thematic understanding is not a rule-bound process but a free act of 'seeing' meaning that it is driven by the epoché and the reduction" (van Manen, 2014, p. 320) which will be examined in the following section .

Epoché and Reduction

For the phenomenologist, data analysis or interpretation is roughly equivalent to phenomenological reflection which is achieved through the "epoché-reduction couplet" (Adams & Turville, forthcoming 2018). "The epoché-reduction is a two-fold methodological gesture that intends to at once suspend one's preconceptions (i.e., the epoché) in order to discover the experiential surge of the lifeworld (i.e., the reduction proper)" (Adams & Turville, forthcoming 2018). Van Manen (2014) succinctly summarizes the interplay of the epoché and reduction:

> The reduction is not a technical procedure rule, tactic, strategy or a determinate set of steps that we should apply to the phenomenon that is being researched. Rather, the reduction is an attentive turning to the world when in a open state of mind, effectuated by the epoché. (p. 218)

Husserl referred to the epoché as the suspension of the natural attitude of "taken for grantedness" that exists in concert with the instrumental scientific view. This makes it possible to reconnect with our primordial experience of the world. Husserl describes his ideas about epoché in his last published work:

> Through the epoché a new way of experiencing, of thinking, of theorizing, is opened to the philosopher; here, situated above his own natural being and above the natural world, he loses nothing of their being and their objective truths and likewise nothing at all of the spiritual acquisitions of his world-life or those of the whole historical communal life; he simply forbids himself….This is not a view, an interpretation bestowed upon the world. Every view about…every opinion about the world, has its ground in the pregiven world. It is from this very ground that I have freed myself through the epoché. (1980, p. 153)

While it is important for the phenomenological researcher to suspend preconceptions and assumptions about the phenomenon being studied, this is not enough. The researcher must also attend to and be true to the phenomenon, which requires a return to the phenomenon itself. This return to the phenomenon itself is what Heidegger (1982) referred to as the "basic component of phenomenological method - the leading back or reduction of investigative vision from a naively apprehended being…" (p. 21). Thus, the reduction can be considered a special attentive way of reflecting upon the world. The reduction itself is not a predetermined procedure, but rather it points to a thoughtful reflective attentiveness (Adams & van Manen, 2008). In this sense, the method of the reduction requires the researcher to take on a phenomenological attitude and engage in a special kind of reflectiveness.

Like van Manen's phenomenology of practice (2014), a postphenomenology of

practice recognizes the importance of taking on the phenomenological attitude or as Ihde (2012) calls it "phenomenological looking" (p. 17). Adams and Turville (forthcoming 2018) make reference to Ihde's, *Experimental Phenomenology* (2012), to illustrate how the epoché-reduction couplet is at the heart of phenomenological looking:

> The first steps of phenomenological looking are usually called an *epoché*, which means to suspend or step back from our ordinary ways of looking, to set aside our usual assumptions regarding things. Within this general stance, particular levels of stepping back are then determined; these levels are termed *phenomenological reductions*. I shall interpret these specifications as working rules or directions for the way the investigation may proceed. Thus, *epoché* and phenomenological reductions may also be called hermeneutic rules, since they provide the shape or focus of the inquiry. (Ihde, 2012, p. 17).

In his phenomenology of practice, van Manen (2014) outlines several methodological movements of the epoché-reduction including the heuristic reduction, the hermeneutic reduction, and the experiential reduction. Although it is possible to address each reduction separately, these dimensions are often attended to simultaneously. The epoché-reduction is methodologically useful in terms of helping the researcher orient oneself to a particular phenomenon and suspend any presumptions that might get in the way of opening oneself up to the phenomenon. Key dimensions of Max van Manen's (2014) approach to performing the epoché-reduction, are summarized below.

The Heuristic Epoché-reduction of Wonder. This heuristic calls for shattering the taken for granted attitude in order to (re)awaken a profound sense of wonder about a phenomenon,

while also challenging the researcher to write in such a manner that the reader of the text is stirred to the same sense of wonder (p. 223).

The Hermeneutic Epoché-reduction reduction of Openness. This heuristic calls on the researcher to continually question personal assumptions and pre understandings to avoid any one-sided understanding of an experience or phenomenon. This means that lived experiences are investigated for sources of meaning and are not overlaid with a particular frame of meaning (p. 224).

The Experiential Epoché-reduction of Concreteness. This heuristic requires the bracketing of theoretical meaning in favour of focusing on the concreteness of the immediate experience. This means paying attention to, documenting, and reflecting on the experience as it is presented in the prereflective moment (p. 225).

Although phenomenologists draw on these different aspects of the epoché-reduction to bracket assumptions and guide reflection, these methods are not typically explicitly referenced in phenomenological texts, and the phenomenological analysis in Chapter 5 is no exception.

The significance and importance of the epoché-reduction cannot be underestimated as it is a prerequisite for the researcher to attain a phenomenological attitude towards the phenomenon being studied. The 'reduction proper' as described by van Manen (2014) is another way to engage in the reflective phenomenological attitude by providing access to the uniqueness of a phenomenon. To provide methodological direction van Manen (2014) has identified several dimensions of the reduction proper which include the: eidetic reduction, ontological reduction, ethical reduction, radical reduction, and originary reduction. These dimensions offer a variety of ways for getting in tune with and drawing

closer to the lived-throughness of a phenomenon. However, it is important to remember that "the various forms of the reduction proper may be incommensurable and at other times complementary" (van Manen, 2014, p. 228).

In terms of actively engaging in the 'epoché-reduction' and 'reduction proper' van Manen's method of phenomenological draft writing, proved to be very useful (see van Manen, 2014, p. 376). The process of repeatedly rereading and redrafting provided an opening for challenging and questioning existing presumptions, making it possible to attend to concrete prereflective experience. In *Phenomenology of Practice* (2014), van Manen describes six approaches to draft writing each of which focuses on a different aspect of phenomenological writing: heuristic (instilling wonder), experiential (focusing on concrete experience), thematic writing (phenomenological thematizing), insight cultivating (gaining insight through scholarly text/works), vocative writing (evoking the reader) and interpretive writing (focusing on deeper sensibilities). Throughout the course of my research I intentionally, and at times intuitively, engaged in the (re)drafting exercises as outlined by van Manen (2014). It was largely through the process of writing and rewriting text that I was able to engage in the phenomenological attitude through the methods of epoché-reduction and reduction proper.

Summary

The phenomenological method requires "an implicit reliance on the taking on of a phenomenological attitude, requiring heuristic attentiveness, creative insight, interpretive sensibility, linguistic sensitivity, and scholarly preparedness and tact" (van Manen, 2014, p. 228). The methodological gesture of the epoché serves in momentarily pushing away preunderstandings and biases, the methods of the reduction assist in drawing nearer to the

phenomenon. The epoché-reduction couplet sets the stage for phenomenologically opening oneself up and the reduction proper draws attention to experience as it is presented to us, "in the end, much of the reflective process of phenomenological inquiry largely happens in the process of writing" (van Manen, 2014, p. 31). Writing and phenomenological reflecting go hand in hand. Phenomenological reflection is not just a matter of writing down a phenomenological analysis, or clarifying the meaning of an experience; it involves writing and rewriting, and is directed toward the ways meaning appears or shows itself in everyday, prereflective experience. Powerful phenomenological texts can "infuse, permeate, infect, touch, stir us, and exercise a formative and affective effect on our being" (p. 27).

Unlike other research methodologies phenomenology is not concerned with establishing facts that can be validated, but rather it is concerned with unearthing the existential meaning of an experience or phenomenon. As such, "the validity of a phenomenological study has to be sought in the appraisal of the originality of insights and the soundness of interpretive processes demonstrated by the study" (van Manen, 2014, p. 348). While this may sound somewhat subjective, van Manen (2014) provides very clear criteria for the evaluative appraisal of phenomenological studies. This assessment process requires scrutinizing the following aspects of the phenomenological text: heuristic questioning, descriptive richness, interpretive depth, distinctive rigour, strong and addressing meaning, and inceptual epiphany (p. 355- 356). While no phenomenological text can ever achieve "full marks" in all of these criteria, each must be present to some degree:

Heuristic questioning. Heuristic questioning refers to whether the text induces a sense of contemplative wonder.

Descriptiveness richness. Descriptiveness richness considers whether the text contains rich and recognizable experiential material.

Interpretative depth. Interpretative depth addresses whether the text offers reflective insights that challenge our taken-for-granted understanding of everyday life.

Distinctive rigour. Distinctive rigour considers whether the text is constantly guided by the distinct meaning of the phenomenon or event.

Strong and addressive meaning. Strong and addressive meaning refers to the text's ability to speak to our sense of embodied being.

Experiential awakening. Experiential awakening addresses whether the text awakens prereflective experience through vocative language.

Inceptual epiphany. Inceptual epiphany asks whether the study offers deeper and original insight, including an intuitive grasp of ethical implications and how it may inform practice.

The following chapter is an in-depth postphenomenological investigation which utilizes the methodology outlined in this chapter. The phenomenological analysis in Chapter 4 directly addresses the main question of this study which is concerned with how students and teachers experience classroom management software. Chapter 5 expands on the phenomenological analysis of Chapter 4 by addressing the subsidiary questions of this study, with an emphasis on uncovering the values and beliefs that built into the design of surveillance technology. This includes challenging commonly taken-for-granted assumptions regarding why we need surveillance technology to watch over youth. While Chapter 5 contains phenomenological analysis, it is not exclusively phenomenological. This departure from phenomenology was necessary into order to glean insight from literature in the field of surveillance studies, which recognizes the political and cultural landscape in which

surveillance technology is embedded. Chapter 5 is an important addition to the phenomenological analysis of Chapter 4 because it is difficult to discuss the implications of surveillance technology without also addressing the underlying values and interests that are built into these tools. Moreover, there can be no thorough discourse about the ethical tensions that surface when surveillance technology is used to watch over youth, without equal treatment and consideration of the ontological, political, pedagogical, and social implications of these tools.

Chapter 4: Teaching at Distance in the Same Room

Bringing the Distance into View

In a recent conversation with another teacher I was asked why I used the term surveillance technology as opposed to a more neutral term like classroom management software. "Surveillance sounds so heavy," he said. "It's not like I am spying on my students." When I explained that I was less interested in "classroom management software" and more concerned about how the dynamics of the student-teacher relationship might change when surveillance technology is added to the mix, he was very quick to share the benefits of watching students with classroom management software. "When you watch students electronically you do not need to hover over their shoulder and get into their personal space," he said. "Plus, if a student goes off task I can usually address the problem without others in the class even knowing. There is no negotiation and there is no power struggle because the student doesn't need to save face in front of his peers. It's win-win." My colleague had a very valid point, but I could not let him off that easy. "But don't you ever find watching students electronically from your desk feels different, maybe even a bit distant?" I asked. "Distant?" he echoed. After a brief pause he admitted that maybe there was a change in the types of interactions he had with students, but what really mattered is that his students were on task and engaged in learning. "Of course the software changes things," he said. "How could it not? That is the point isn't it? As long as my students are doing what they are supposed to, what difference does it really make?"

The *difference* might not be immediately obvious or easily summarized in a few short words, but the difference is very real and matters a great deal. Bringing the difference to light is not only the impetus for this inquiry, but it is critical for understanding the human-

(surveillance)technology-world relation and the ethical tensions that come with it. In the most general sense, the difference that technology makes in our lives has been described in many ways. Technology can make life easier and more difficult. It may bring us together by overcoming time and space, yet it may also leave us feeling somewhat disconnected. It may help us think, but may also reduce us to a thoughtless, mindless state. This paradox of technology makes it very difficult to simply classify it in terms of good or bad, helpful or hurtful. Similarly, surveillance technology can be enabling and liberating, while at the same time oppressive and dictatorial (Taylor, 2013, p. 5). This paradox of surveillance technology is a good reminder that polarizing it in terms of simply good or bad is short sighted and imprudent. Surveillance technology is complicated and messy and this is especially the case when electronically watching over children in schools. Schools are unique in that they are social environments where children learn and incorporate societal values and norms. Young children in particular are very impressionable and can be easily habituated to new technological practices. At the same time, the uses and effects of surveillance technology are not predictable, nor obvious. With these important ethical tensions looming in the background, this calls into question exactly how the omnipresent electronic eye of classroom management software might command children differently than the watchful eye of a teacher.

To help bring clarity to how surveillance technology habituates and situates itself in schools, I turn to the lived experience of teachers and students who live and work with these tools every day. Entering the realm of everyday experience enables us to become engaged with pre-reflective or "pathic" oriented knowledge. Unlike other kinds of knowledge, such as knowledge about the curriculum or pedagogical methods, pathic knowledge is sensed or

felt. “The pathically tuned body perceives the world in a feeling or emotive modality of being” (van Manen, 1999, p. 13). These pathic dimensions of experience resonate not only in the body, but also in the things that make up our world, our relations with others, and our actions.

> These are the corporeal, relational, temporal, situational, and actional kinds of knowledge that cannot necessarily be translated back or captured in conceptualizations and theoretical representations. In other words, there are modes of knowing that inhere so immediately in our lived practices—in our body, in our relations, and in the things around us—that they seem invisible. (van Manen, 2014, p. 268)

While all of us experience these existential aspects of being, we are not always conscious of the ways in which our pathic sensibilities act upon us. This understanding or way of knowing, “is sensed or felt, rather than thought—and it may not even be sensed or felt directly with attention” (Gendlin, 1988, p. 45). Indeed it can completely escape our awareness. Similarly, McLuhan (1964) asserts that we are often unaware of the effects that technology may have on us.

> Everybody experiences far more than he understands. Yet it is experience, rather than understanding, that influences behavior, especially in collective matters of media and technology, where the individual is almost inevitably unaware of their effects upon him. (McLuhan, 1964, p. 318).

It is the task of phenomenology to bring awareness to these often taken-for-granted aspects of lived experience. By revealing these overlooked dimensions of everyday life, phenomenology can tell us a great deal about the differences that classroom management

software may be making, including how it may be constraining and retraining teachers' pedagogical practices and activity patterns. Attending to the lived-through dimension of experience may also provide unique insight into how classroom management software changes how the teacher "sees" the student and how the student perceives the teacher.

The difference classroom management software may make

> *When I first got classroom management software in my computer lab I absolutely loved it! It made it so easy to ensure students stayed on task. It wasn't long before I realized that as long as I was at my desk, students would not even try to go off task. At first this was great but eventually I felt chained to my desk because every time I would venture away students would see this as their opportunity to go off task. Before I had the classroom management software I regularly walked around the classroom. I enjoyed small talk with students and I am quite certain the feeling was mutual. Now there are significantly fewer opportunities for those types of conversations. I must admit it has significantly changed the climate of my classroom. Before my class was a lively welcoming place but now the sound of vivacious student voices has been replaced by the tap, tap, tap, of the keyboard keys.*

This teacher's experience using classroom management software over the course of the semester tells us a great deal about the difference that watching students with classroom management software can make. It is truly remarkable how something as simple as a teacher spending time monitoring students through a computer screen from behind a desk, rather than walking up and down the rows of a computer lab could have such a profound impact upon the classroom climate. Reliving this teachers' experience with classroom management software, it is very clear that *something* has been lost. Yet if you asked her what this

something is, it would be very difficult to explain. What is clear, is that this new classroom is in stark contrast to the classroom that was once "pregnantly alive in the presence of people" (Aoki, 1986/1991, p. 159). If we let the disquieting tapping sound of those keyboard keys echo in our head, we get a glimpse into exactly how mechanized this variant new world has become. Yet we also know that in this classroom there is a living, breathing teacher. We sense the loss of resonance, depth, and richness that she experiences in her day-to-day interactions with students. Those spontaneous casual conversations that at one time must have seemed so very inconsequential, have now surfaced as something meaningful. It is almost as if she misses her students who are ironically in same room.

Despite the immense value that this teacher places on those casual yet meaningful interactions, the classroom management software calls her to act in a way that circumvents this possibility. Even before the teacher enters the classroom, the design of the software calls her to watch over her students in a specific and predefined way. The terms of engagement for using this technology necessitates that she monitors students from the distance of her computer station. In this way the classroom management software silently but forcefully "form[s] intentionalities and inclinations within which use-patterns take dominant shape" (Ihde, 1990, pp. 140-141). Even when she wishes to leave the confines of her desk and venture beyond the software's prescribed perimeter, the software summons her back. As new pedagogical practices emerge, existing pedagogical practices are diminished or replaced, and the classroom becomes a very different place.

Classroom management software, like all technology is far from neutral. This software requires that teachers watch over students according to its own terms and conditions. Heidegger (1972) calls this a "fitting response". "When we handle a thing… our

hand must fit itself to the thing. Use implies a fitting response" (Heidegger, p. 187). But, it is not just the hand that must "fit" to the classroom management software. As Merleau-Ponty observes, "our existence changes with the appropriation of a fresh instrument" (1962/2002, p. 143). This is not a simple matter of surveillance technology shaping our actions, rather this is a co-constituting relation. "Digital technologies are complex physiognomies – 'gestures' – that mimetically invite, scaffold, and interactively sustain new forms of human being in the world" (Adams, 2012, p. 263). As this teacher's everyday activities and practices become enmeshed with the classroom management software, the lines between technology and human become blurred and it becomes increasingly difficult to know exactly who is acting upon whom. The teacher is caught between the call of her pedagogical sensitivities and the call of the software. In the end the call of the software wins, and she finds herself teaching at a distance, in the same room.

It is fascinating how at times we may have an implicit felt understanding in a situation, yet complete awareness only comes after the fact. For this teacher, it is only after the white noise of keyboard keys fills the space of classroom that retroactive awareness comes. In those prereflective moments, while she electronically watches over her students from the confines of her desk, she does not see the conversational relational space of her classroom quietly being transformed. Awareness only comes with loss. Admittedly, with awareness comes the ability to react, but what about those instances when awareness never comes? Or worse yet, what about those instances when the transformation is permanent and irreversible? "Despite how easy it may be to 'turn on' the latest technology… 'turning off' or resisting the effects and influences of that technology can turn out to be surprisingly difficult" (Adams, 2008, p. 6). There is no guarantee that even if this teacher reverts back to

her previous pedagogical practices that her classroom would return to the lively space that it once was. We don't know the grip that surveillance technology might have on her students, and how its mere presence might be a contributing factor to the new mood that has taken over the classroom. In any case, the one thing we do know for certain is that when spontaneous casual conversations cease (or even just decrease) the classroom becomes a very different place.

Very little attention is given to the importance of building pedagogical relationships through casual conversation, so it is not surprising that its significance is often overlooked. The significance of conversation and the manner in which it contributes to the overall classroom climate points to the relational dimension of pedagogy. This relational dimension is closely tied to "the general mood, sensibility and felt sense of being" (van Manen, 2002, p. 220) that teachers create in classrooms. This conversational relational space of the classroom is not to be confused with classroom discussion or "classroom talk". The term, conversation, can be etymologically traced back its Latin origin, *conversationem*, which means "act of living with". Likewise its stem, *conversari* means "to live with, keep company with". Both of these meanings evoke a sense of togetherness, camaraderie, and shared space. The etymology of discussion however points toward something altogether different. The Latin *discutere* means to shake violently or shatter to pieces. Discussions tend to emphasize differences between ideas, topics or opinions. The aim is to 'stir up' existing belief systems and 'shatter' any current or opposing beliefs. The objective of a classroom discussion, for example, is to focus on a specific issue or topic with the intent of leading the discussion toward a particular conclusion or point. Good conversation on the other hand is not about debating, forcing a point, or learning something new, rather good conversation brings participants together

through personal meanings, feeling, emotion, and shared atmosphere. When we make conversation the primary objective is often to simply break the silence. Yet ironically, idle conversation has the potential to build bonds that can touch us very deeply. We know "something is a conversation if it leaves something behind in us" (Vessey & Blauwkamp, 2006, p. 356). By circumventing or even just limiting opportunities for these types of meaningful interactions, the dynamic between teacher and student changes, and the classroom becomes a very different place. So if casual conversation is an important aspect of creating a positive classroom climate, then perhaps the difference that classroom management software makes does matter after all.

Of course a classroom of students quietly working, in and of itself, is not such a bad thing. A quiet classroom can be a sign of a productive learning environment. After all, common sense tells us that it is easier to concentrate without the distractions caused by idle chat. Yet a "quiet" classroom can be experienced in a multitude of ways. For example, there is a big difference between *silent* students versus *silenced* students. This is not to suggest that the presence of classroom software necessarily muzzles students, but rather that its presence may inadvertently impact the mood and atmosphere of the classroom. Most of us have likely experienced a space in which the atmosphere and mood of a place has called on our pathic sensibilities and influenced how we perceive and act in that space. For example "when we walk off a crowded street into a cathedral, our whole demeanour changes even if we are not alert to it." (Dreyfus & Spinosa, 2003, p. 346). Classrooms, like all places, carry with them a characteristic mood and atmosphere, which influences how the space and the people in it are perceived. The significance of the atmosphere and mood that classroom management brings with it, should not be underestimated. "The classroom atmosphere envelopes and affects

everything, including how a teacher is present to students and how students are present to the teacher" (van Manen, 2002, p 34).

For MaryAnn, the mere presence of classroom management software alters the mood and atmosphere a great deal.

> *It is orientation day at the high school and I am buzzing with excitement. As part of the school tour we visit the school library. The librarian greets us with a friendly welcoming smile and shows us around. When she gets to the area with the computer terminals she tells us that the library computers should not be used for entertainment. She then cautions, "I should warn you, if you try to break the rules you will get caught. We can see everything that students do on these computers. In the very unlikely event that you don't get caught in the act, we can catch you by looking back at your computer logs. Every move and every keystroke that you make is watched and recorded." With these words everything changes. The presence of the librarian is no longer felt as welcoming and I am no longer excited to be here.*

When MaryAnn leaves the library, she leaves a very different space than what she had first entered. The mere thought of being watched so closely with classroom management software sours the mood and atmosphere tremendously. As she leaves the library, we get a sense that her pathic sensibilities tell her that something about being watched in this way does not feel quite right. We see her excitement and eagerness morph into trepidation and uneasiness. Clearly she is not accustomed to being watched this way at school.

For other students, the message that classroom management software sends alters not only the mood and atmosphere of the classroom, but also how teacher is perceived. This

student's recollection is very telling of how tools like classroom management software may alter the dynamic of pedagogical trust.

> *We are about to go to the library to do research for our assignment when our social studies teacher reminds us about the software that is installed on the library computers. He warns us that they can see everywhere we go and everything we do on the school computers. Then I hear Jason who is sitting beside me scoff, "Don't you trust us?" The teacher responds that he absolutely trusts us but somehow his words don't reassure me.*

When classroom management software is used to peer into every aspect of a student's virtual world, it can alter the dynamic of trust between student and teacher. In some cases the introduction of classroom management software may even create a sense of "them against us". Unlike the living breathing teacher, classroom management software cannot caringly look over the shoulder of a student with the helpful intention of providing guidance and encouragement. As the software commands the teacher to watch over students from the distance of the teacher workstation, this forgoes opportunities for the teacher to reassure students that the teacher is there to help. The teacher's counter message of trust and support is drowned out by the software's overpowering Orwellian message of mistrust, control, and suspicion. Whether intended or not, the use of surveillance technology conveys, and perhaps even betrays, an underlying lack in trust (Rooney, 2010). In fact, it is not uncommon for rigid attempts to control Internet usage to foster division in schools (Hope, 2008, p. 111). Even when the surveillance of students is done in the interest of personal safety, students can feel patronized and that there is a lack of respect for their ability to make decisions and choices (Steeves, 2004). In this sense, the atmosphere and mood created by surveillance

technology has less to do with how it is used and more to do with the fact that it is introduced at all.

The mood and atmosphere of a place is closely tied to the things that exist in that space. Electric light transforms spaces that would otherwise be completely enveloped by darkness. While we may not experience light as a tangible thing, its transparency is what makes it possible for things to be seen. In this way, light can create an environment and alter the mood and atmosphere of a place by its mere presence. Without saying a word, it can speak volumes. Similarly the environment created by the presence of classroom management software sends a very clear message to students. While students may not experience the software in its thingness, they know it is always there, watching over them. Its constant presence reminds them that they are not alone, that their every move is being watched, that they cannot be trusted. Indeed, the fact that this software is needed and used at all, speaks volumes about the trust and faith that we have in our students to do the right thing. Trust is "at the heart of any genuine educational enterprise" (Lahno, 2001, p. 184); however, surveillance technology corrodes educational environments by working against the development of this trust (Warnick, 2007). Moreover, the software robs students of the opportunity to show they can be trusted. This lack of trust and diminished opportunities for students to show they can be trusted alters the student experience of being watched and inadvertently may even divide and distance the student and teacher.

Ironically, even though the use of classroom management software may be perceived by some students as a form of mistrust, classroom management software may also be perceived as something that enables the trust of students. This trust paradox is illustrated

through the following student's recollection of a class announcement made by his computer teacher.

> *The day before my teacher left for his day surgery he told the class he knew he could trust us because the classroom management software would tell him if we broke any rules.*

In one breath the teacher is telling his students he trusts them, but at the same time he seems to be warning them that he would be checking up on everything they do while he was away. Even though the teacher seems to be suggesting that classroom management software enhances the trust that he has in his students, most people would agree that watching every move that a student makes on a school computer is a strange way to demonstrate trust. While classroom management software may enable something that resembles trust, this is not to be confused with "enhanced" trust. If anything, classroom management software diminishes the need for teachers to trust students. Of course surveillance technology in general "cannot obviate the need to trust entirely, but the intention appears to be to… reduc[e] the trust that may be required" (Rooney, 2010, p. 352). In many ways the heart of the pedagogical relationship is built on trust, but when a student is only being trusted because surveillance technologies are being used, this calls into question whether the student is genuinely being trusted at all. When classroom management software serves as a replacement for trust based relationships, it creates nothing more than a conditional false trust. So while classroom management software may diminish the need for teachers to trust students, this does not mean that teachers necessarily trust their students any more than they did before. "As surveillance technology is increasingly relied upon, it can only ever produce a veneer of trust, or a thin trust" (Taylor, p. 66).

It is interesting that many students perceive the watchful eye of classroom management software as a betrayal of trust, yet they tend to accept the watchful eye of the teacher. So why might electronic surveillance sour the educational environment more so than the presence of the teacher or librarian who watches over students for the same purpose? If we were to shadow Mrs. Dean, an elementary school teacher supervising students at recess we would see her staying in close proximity to Gerry and Roland who have made a hobby of wrestling with each other at recess. Over the years, Mrs. Dean has walked countless children hand-in-hand to the infirmary to be treated with bandages and ice packs. Regardless of whether an injury is an accident or due to the careless fault of their own, each child is always treated with the utmost care. As she walks each child to the infirmary, her main priority is to comfort the injured and distressed child. So when Gerry and Roland feel Mrs. Dean's lurking presence on the playground it is not felt as encroaching or overstepping. They know Mrs. Dean's presence is not only about enforcing rules, it is also a caring kind of watching. While teachers and school officials might be in the business of watching over students, it is clear that it is not their only business. Even when teachers are sometimes required to send messages of mistrust to students, these messages are counterbalanced with messages of concern, care, and support (Warnick 2007). It is not uncommon for teachers to cheer on students at extracurricular events, celebrate success at student award ceremonies, encourage students who might be dealing with personal hardships, and to joke with students in the halls. The watchful eye of classroom management software however, does none of these things. It serves only one purpose, and its purpose is clear.

When youth are watched by teachers, this may often be experienced as a caring kind of trust; electronic watching on the other hand, is more likely to be experienced as a

controlling kind of mistrust. These two faces of surveillance become very evident when we consider the ways in which an adult might watch over a child.

> I may ask you to "watch over" my child to ensure that she does not stray into the street. . . . In this case, I have protection primarily in mind so that the child is shown care. . . . Or I may ask you to "watch over" the same child to ensure that she does not get up to mischief. Now I am appealing to moral criteria . . . proscription, perhaps, even control. The same process, surveillance—watching over—both enables and constrains, involves care and control. (Lyon, 2001, p. 3)

Indeed some surveillance technologies such as CCTV cameras can have a "caring" side in the sense that it can make students feel more safe. Intuitively a student may know that he or she doesn't need to be watched so closely at school, yet the gaze of the CCTV camera may bring comfort knowing that others in the school are being watched in this way. Even so, it is difficult to know whether the most salient message that CCTV cameras send youth is one of care or mistrust (Warnick, 2007). Classroom management software on the other hand, does not bring undertones of safety and care in the same way that CCTV cameras can. CCTV cameras not only watch students, they also watch the 'bad guys'. Classroom management software on the other hand, seems to be less about safety and more about catching students who break the rules. This fact alone significantly changes the dynamic of being watched with classroom management software.

At the same time, not all students experience classroom management software as mistrust. Justin's experience paints a very different picture of classroom management software.

> *When I work on an assignment using a school computer all I do is focus on the assignment at hand. The last time I worked on a project I got so involved in the task at hand that everything around me faded away. It was just me and my thoughts.*

This student clearly is not preoccupied with the presence of classroom management software. In fact he does not even seem to be aware of its presence. When software is experienced as a background relation, it not uncommon for it to function transparently, often operating completely unnoticed. Another student, David, recalls his first introduction to classroom management software as something positive.

> *When my friend told me that we were getting classroom management software in the computer lab I embraced the idea. "Good," I told him, "It is about time the school does something about all of the slackers who surf the net all class. It is not fair for the rest of us."*

As the experiences of Justin and David reveal, not all students experience classroom management software in a negative light. For these students the motto "if you've got nothing to hide, you've got nothing to fear" is very much at play. Indeed, when one does not feel like he or she is a target of surveillance it is easy to let the technology fall into the background. Yet, just because surveillance technology may be experienced as a background relation that goes unnoticed, this does not make its effects any less consequential or substantial.

Regardless of how a student perceives the presence of classroom management software, when the teacher is physically distanced from her students and watches them from across the room, there are fewer opportunities for teachers and students to interact on a personal level. This in of itself, has broad implications for the development of the

pedagogical relationship. Whether students welcome or denounce the embrace of classroom management software, the unintended effects are the same for everyone. To some degree this technology has the potential to degrade the student-teacher relation, by altering pedagogical practices and routines that foster the development and growth of positive pedagogical relationships. Thus it is important that teachers recognize the ways in which classroom management software calls on them watch over students in a specific and prescribed way. Even in cases where a teacher does not solely rely on classroom management to watch over students, this awareness is helpful. It reinforces the need for teachers to find the right balance between reliance on the software and other methods of watching over students which facilitate the development of mutual trust and respect.

The Look

While we have explored how classroom management software might physically and metaphorically distance the teacher and student, we have not yet explored what it is actually like to be watched in this way. A necessary starting point for understanding the experience of being watched is Jean-Paul Sartre's famous description of the Look from *Being and Nothingness* (1993). While this passage does not make direct reference to surveillance technology that is used in schools, this rich phenomenological account tells us a great deal about the experience of watching and being watched, including the ontological implications of the surveiller suddenly becoming the surveilled. Sartre (1993) begins his description with an anonymous observer watching another through a keyhole.

> I have just glued my ear to the door and looked through a keyhole. I am alone… behind that door a spectacle is presented as "to be seen," a conversation "to be heard." The door, the keyhole are at once both instruments and obstacles; they are

> presented as "to be handled with care"; the key- hole *is* given as "to be looked through close by and a little to one side," *etc.* Hence from this moment "I do what I have to do." No transcending view comes to confer upon my acts the character of a *given* on which a judgment can be brought to bear. My consciousness sticks to my acts, it *is* my acts; and my acts are commanded only by the ends to be attained and by the instruments to be employed. My attitude, for, example, has no "outside"; it is a pure process of relating the instrument (the keyhole) to the end to be attained (the spectacle to be seen), a pure mode of losing myself in the world… (p. 259)

Here the observer is completely absorbed and focused on the act of looking through the keyhole. The keyhole is not seen by the observer in its physical form, rather the keyhole invitingly presents itself as something to be looked through. As the observer is engaged in looking through the keyhole he is completely consumed in watching; however, everything changes when the observer hears footsteps in the hall. These footsteps bring with them a new modality of being, including a new sense of bodily awareness and self-consciousness. The subject now becomes the object. The observer becomes the observed.

> …I am suddenly affected in my being and that essential modifications appear in my structure modifications which I can apprehend and fix conceptually by means of the reflective cogito. First of all, I now exist as myself for my unreflective consciousness. It is this irruption of the self which has been most often described: I see myself because somebody sees me- as it is usually expressed. (Sartre, 1993, p. 260).

With the sound of footsteps enters the possibility of being watched. With this possibility, the body is no longer unconsciously lived-through, it is now experienced through the eyes of the second person in the hall. As the observer's invisibility is disrupted, there comes a new

awareness of the body, space, and relation. The mere possibility of being watched changes everything. "…all of a sudden I am conscious of myself as escaping myself… I am for myself only as I am a pure reference to the Other" (Sartre, 1993, p. 260). This experience is not simply a matter of being physically seen. There is nothing neutral about the Look. "It is shame or pride which reveals to me… myself at the end of that look. It is the shame or pride which makes me *live,* not the situation of being looked at" (p. 261). This is "a value-laden looking which has the power to objectify and causes the subject to turn attention to him- or herself in a self- reflective manner. When I am *looked at* by another, I am reduced to an object" (Dolezal, 2012, p. 15).

Through the passage of *The Look,* Sartre is able to reveal that concerns around self-presentation and bodily visibility are neither trivial nor insignificant. Our consciousness is instantly and radically altered when we realize we are under surveillance. "I see myself because somebody sees me," Sartre says, "I am indeed that *object* which the Other is looking at and judging" (Sartre, 1993, p. 349). With the look of the Other we no longer live in an mode of immediacy acting for ourselves, the scrutinizing Look forces us to act for the Other. Whether we like it or not, to some degree a single glance from the Other has the power to *define* who we are. Indeed most of us have experienced that feeling of being more self-conscious and less free-wheeling when we know we are being closely watched. Even when we think we *might* be watched, we consciously pay more attention to how we present ourselves.

The power of Sartre's Look is not limited to the watchful human eye. Consider the experience of the familiar Pavlovian cringe that we sometimes get while walking through a security gate at a library or airport. That nervous feeling that overtakes our body is the Look

of the security gate silently altering our awareness and self-consciousness. Similarly surveillance technology in schools can act upon students, making them more aware of themselves and their actions.

> *It is the first week of school and I have just ran into an old friend. As a joke, I catch him off guard and playfully put him into a headlock. In that instant I catch a glimpse of myself on the newly mounted LCD screen hanging from the wall. I see a larger teenager rough housing a smaller boy. Seeing myself on the screen stops me dead in my tracks. I quickly release the headlock.*

When this student sees himself on the LCD screen, he sees himself as others might view him. He quickly releases the head lock because he doesn't want to be the person he sees on the screen. Even though he knows this interaction is a friendly encounter between friends and that no one is getting hurt, when he sees himself on the screen he becomes consumed with how outsiders might perceive the situation. Much like the Look forces the observer to see himself through the eyes of the other, surveillance technology such as CCTV video cameras and classroom management software compel those who are being watched to see themselves through the eyes of others. This judging, unforgiving Look is not concerned with personal circumstances and the situational context. The Look only sees the world in terms of black and white, innocent or guilty. In this way surveillance limits one's autonomy by preventing students from presenting themselves in the manner of their own choosing. So, being watched in this way not only brings awareness to our bodily being, it also compels us to act for the other, in effect making our choices no longer our own.

The panoptic "Look": always being under surveillance

With the Look, Sartre provides a powerful example of how the mere possibility of being watched by a third unknown party can alter the consciousness and choices of the person being watched. In some ways this experience parallels that of being watched by the all-seeing panopticon. The panopticon is an architectural structure that through its design encourages self-surveillance and self-regulation. The panopticon is described by Jeremy Bentham (1748-1832), as ''a new principle of construction applicable to any sort of establishment, in which persons of any description are to be kept under inspection" (Bentham 1995, p. 29). This would include prisons, factories, psychiatric wards, hospitals, and schools. In the context of schools, the intention of the panopticonal architectural design is that "[a]ll play, all chattering—in short, all distraction of every kind, is effectually banished'' (Bentham 1995, p. 86). In many ways, the panopticon relies on the power of the Look of the Other to make those being watched become self-conscious, thereby encouraging in self- surveillance; but unlike Sartre's Look, the look of the panopticon differs in that it is unverifiable, and omnipresent. As such the design of the all-seeing panopticon changes the dynamic and experience of watching and being watched.

> This is an architecture that is no longer built simply to be seen (as with the ostentation of palaces), or to observe the external space (cf. the geometry of fortresses), but to permit an internal, articulated and detailed control—to render visible those who are inside; in more general terms, an architecture that would operate to transform individuals: to act on those it shelters, to provide a hold on their conduct, to carry the effects of power right to them, to make possible to know

> them, to alter them. Stones can make people docile and knowable. (Foucault, 1980, p. 172)

The panopticon is not merely an architectural structure that enables the efficient observation of another. It induces a state of conscious and permanent visibility, altering the experience of what it is like to be watched. In this way, the panopticon is similar to the Look in that it is experienced as a kind of "conscience-building device" (Gallagher, 2010, p. 263). Indeed the panopticon has the power to shape how the surveilled perceives and relates to oneself.

> [The panopticon] transforms [one's] relation to [oneself] …panoptic observation involves a productive soul training which encourages [one] to reflect upon the minutia of [one's] own behavior in subtle and ongoing efforts to transform [oneself]. (Haggerty & Eriksson, 2000, p. 606)

Thus the experience of the panopticon is not only about being watched, it also the experience of self-awareness and watching over oneself. Foucault (1975) considers the panopticon the ideal form of surveillance because those being watched end up self-regulating their own behavior, making the need to exert power over those being watched unnecessary. In this way, the gaze of the all-seeing panopticon significantly alters the experience of being watched.

In many ways, the experience of being watched by the all-seeing panopticon parallels the experience of being watched by classroom management software. When a teacher watches over a class in person it is normally impossible to give the illusion of being everywhere at once, but the following student's experience with classroom management shows how the software changes this.

> *I am working on my computer when I feel my phone vibrate. I pull the phone out of my pocket and see that I have gotten a text. Before entering my password I look at the teacher. She is sitting at her desk helping another student. Then I notice the student return to her work station. I begin to wonder if the teacher is now watching my computer screen from her desk. I wonder if she will notice that I am not working and will look in my direction. Unsure of the situation, I slip my phone back in my pocket. The text will have to wait.*

The panopticon, like classroom management software is a technology that alters the experience of being watched by dissociating the dyad of seeing and being seen. If we look closely we see that there are striking similarities between the central lookout tower and the teacher's desk. Of course, the teacher is never physically hidden in the same way that the backlighting veils the observer of the central tower, but the teacher's actions on the computer can never be fully known. As long as the teacher is at her desk, students cannot tell what she is doing. For all they know she could be marking, checking email, doing attendance, or using classroom management software to watch their every move. Even though the teacher and student are in same room, when the teacher is at her desk it is impossible for the student to ever know for sure whether she is being watched electronically. Although this student knows it is physically impossible for her teacher to closely watch every single student, it is the fact that she does not know whether she is the one being watched that controls her behavior. The mere possibility of being watched forces the student to reconsider and alter her behavior. Unlike the watchful eye of the teacher, the omnipresent eye of classroom management software is unescapable. Classroom management software is everywhere and

nowhere. It relentlessly watches every move a student makes, reminding them that the choices they make are not their own.

Altering one's behavior because of the possibility of being watched is not an uncommon phenomenon. This is why on long road trips we resist the urge to speed; we never know who might be watching and recording our speed as we go around that next corner. Indeed simply knowing that we *might* be watched can compel us to act as if we *are* being watched. Yet, it is also true that many of us have gotten speeding tickets because in the moment we simply did not think about the possibly of being watched. As we drive we are not always thinking about whether there is a police car around the corner. Our mind can wonder, we might get distracted by other people in the vehicle or our surroundings, and on occasion we may even consciously choose to speed because we are late. Without the visibility of the central tower reminding us that we are being watched, and our willingness to comply, the power of the panopticon ceases to exist. Even when the metaphorical central tower is visible, in the form of a police car or the presence of a teacher, this is never a guarantee that its presence will necessarily completely control or influence behavior.

The following common scenario of a teacher addressing the behavior of a class clown is a good reminder of the limitations of the panoptic metaphor in schools.

> I notice David stand up and do a little dance, right in the middle of the lesson. He sees the teacher watching him, and turns to her, smiles and dances again, rather optimistically. She shakes her head and he stops and sits down. (Gallagher, 2010, p. 266)

This is far from the perfect panoptic scenario because awareness of the teacher's presence is not enough to encourage David to self-regulate his behavior. Even when David is fully aware

of the teacher's gaze, he taunts her with a smile and continues his behavior. Complete awareness of the teacher's presence does not always put an immediate end to unwanted behavior in the classroom. If an attention seeking student is compelled to clown around, it may make little difference how closely the student is watched.

Even in the case where the omnipresent, unverifiable panoptic Look of the classroom management software is at work, this can never guarantee that every student will necessarily respond in the way that we expect as this student anecdote illustrates.

> *One time we had a substitute teacher and I googled all kinds of things that I knew were off limits. In that moment I simply did not feel like answering questions about a boring short story.*

While students like this are in the minority, there will always be that one student who cannot be subjugated by the panoptic Look. This student knew the capabilities of the software but at the time simply did not think about how his every keystroke was being recorded. Whether the watchful eye of the teacher is experienced as discontinuous or panoptic makes little difference. These students will simply do what they want to do, when they want to do it, regardless of how great the possibility is that they will get caught. Some students may even thrive on the challenge of not getting caught. It is these students who make pure panoptic watching an impossibility. Ironically, surveillance technology is typically created and used in schools with these types of students in mind, yet they may be the least likely to experience the watchful eye of surveillance technology in the way it is intended. This calls into question whether these tools actually serve their intended purpose.

The diversity of the ways in which students can experience being watched with surveillance technology in schools reveals how surveillance is best understood as situational

and contextual. While Sartre's account of the Look and the metaphor of the panopticon are not all-inclusive, both can serve to provide a glimpse into what is like to be watched with classroom management software. Both Sartre's Look and the panopticon show us that when someone knows he or she is being watched, their choices no longer become their own. The Look of classroom management software brings with it a heightened awareness of the self which compels students to make choices based on the perception of others, namely the teacher. Similarly, the metaphor of the panopticon reminds us that the experience of being watched with classroom management is also very much about the experience of one watching oneself. In this sense, classroom management software acts as a 'surveilling other' that serves to watch over, judge and even discipline the self, which in turn compels students to restrain and control behavior.

Bodies Lost on the Sidelines

Sartre's account of the Look helps us recognize how being watched by classroom management software can make students more self-aware and self-conscious. What is less obvious is the ways in which the teacher's experience of watching students with classroom management parallels the experience of the observer looking through a keyhole. Whether one peers into another world through a keyhole or classroom management software, what one actually sees is never the technology itself. The keyhole and computer screen silently slip into the background as attention is drawn into the world that exists beyond the technology itself. "It is a pure process of relating the instrument (the keyhole) to the end to be attained (the spectacle to be seen), a pure mode of losing (oneself) in the world…" (Sartre, 1993, p. 259). Similarly, when the teacher looks at the computer screen it withdraws to become immediately and already the world of the student that is under observation. Ironically, the

keyhole and technology are what enables the new world to be seen, yet they simultaneously limit what can be seen. “The door, the keyhole are at once both instruments and obstacles” (Sartre, p. 259). The keyhole restricts the observer’s peripheral vision, so only actions that take place immediately in front of the keyhole can be seen. All sideline actions go completely unnoticed. In the same way, classroom management software permits the teacher to see a limited view of his or her students. While the software enables the teacher to see the contents of a student’s computer screen, it never permits the teacher to see the child in his or her entirety. Both the keyhole and classroom management software shape and transform what is seen, and what is not seen. This transformation is not to be taken lightly; it is not “merely an imitation or reproduction” that comes into being but rather a new “variant world” (Ihde, 1983, p. 59). But exactly what variant new world is seen when the watching of children is mediated through classroom management software?

As technology weaves into the fabric of the teacher and student relation, attending to what is on the screen can quite literally screen off student bodies as this teacher’s experience illustrates.

> *I begin checking up on my students by scanning each student’s miniature computer screen that is displayed on the teacher console. I see that station number one has the word processor open and there are no other distracting applications open on the screen. I scroll to the next miniature computer screen, quickly scan it, and then move on. By station number four the process has become automatic. Scroll, scan, repeat. Scroll, scan, repeat.*

When one watches students through classroom management software, attention is dislocated away from the student bodies and towards the world of the student that is displayed on the

computer screen. Rather than watching living breathing bodies, the teacher now looks for screens that don't belong. In the process, student bodies are pushed to the sidelines, outside the reach of the technology's peripheral view. By design, the gaze of classroom management software excludes the embodied person. In place of the sidelined student bodies, the teacher watches electronic body doubles in the form of images on a computer screen. The teacher no longer sees a living body in front of her but rather a "display" of student work. The student is translated into whatever task is at hand. Students become distinguishable not by personal traits and characteristics, but by the amount of work they have completed on their screen. Tammy is now seen as station number 5: typing a business letter, Shawna is seen as station number 6: conducting an Internet search, and Dianna is station 7: putting the finishing touch on a graph. Seeing a child in this way reduces the child to a thing like entity, stripping the child of the very qualities that make up who they are. The child's condition is now measured in terms of *productivity* as represented by student mouse movements, keyboard strokes, and the status of a school assignment. Of course that is not to say that a teacher using this software never "sees" her students. Teachers who use this technology are certainly not limited to watching students through the screen, nor are they restricted to solving problems through the use of this technology. A good teacher will recognize when a human touch is needed. Nonetheless, in those pre-reflective moments, when teachers encounter students as tiny thumbnails on a computer screen, the student is reduced to a distant body sitting in the sidelines. It purges the person to a mere behavioral trace, pushing the child out to the periphery of the sidelines.

When students are lost in the sidelines, access to important aspects of the students lived bodily experience is lost. This teacher's experience is a reminder of the importance of not over relying on software to watch over and correct student behavior.

> *As I am scanning student computer screens I notice one computer seems to be inactive. I enlarge the screen to get an idea of what is going on, but there is no sign of the student engagement. Concerned I send the student a popup message asking if everything is OK and I wait. There is no response so I head over to the student's computer station and ask the student how she is doing. I hear her mumble the word "fine" but the look on her face tells me something altogether different. Her usually pink completion has a greenish yellow tinge to it, her eyes are sunken, and she appears to be trembling. At that moment she slightly hunches over and clenches her stomach. The child is visibly ill and clearly needs to be taken to the school infirmary.*

Much like the keyhole invites the observer to look through it, the classroom management software invites the teacher to peer into the student's world though the computer screen. Accepting this invitation, the teacher adapts to the terms of the software and watches students through the distance of her computer. By choosing to check up on the child through the software, this teacher unknowingly withdraws from pedagogical immediacy. As the teacher watches and engages with a computer screen that is meant to represent the child this body-double tells the teacher very little about the reality of the child's actual condition. Unbeknownst to the teacher, this child is caught in the sidelines and the teacher is stripped of the opportunity to become wholly aware of her bodily being. The child might be visible from across the room, yet she is not wholly seen. In this way, classroom management software

disrupts the bodily presence of the students, pushing them out to the sidelines, where they might be noticed from a distance but never wholly seen.

Unlike watching students electronically, when a teacher supervises students in person, she relies on all of her senses and takes in a myriad of things all at once. Her field of vision permits her to see that Nancy is reading and that Wendy is looking out the window, while James and Kim are passing notes. Her sense of smell tells her that someone is chewing bubble gum, while the sound of the pencil sharpener tells her someone is behind her at the back of the room. This type of watching involves all of the senses and brings with it an understanding of the child's embodied personhood that is communicated through the face, voice, gesture, presence, and even smell. A teacher can tell a great deal by simply looking at the face of student. The face "is a living presence; it is expression…" (Levinas, 1969, p. 66). When the teacher watches students using classroom management software, however these aspects of the embodied child are lost. The child's experience of frustration, confusion, eagerness, disinterest, understanding, or agreement cannot be gauged by looking at a screen. The teacher fails to see that Stephen might not have gotten a good night's sleep, that Cory's mind is elsewhere, or that Kayla is ill.

When a child feels that he or she exists in the periphery of the sidelines, this may shape how the teacher is present to the child.

> *I am sitting in my grade 8 computer class working on an excel spreadsheet and the formula I entered doesn't seem to be working. I raise my hand to get the teacher's attention. The teacher is sitting at his desk and doesn't seem to notice me. The classroom is quiet so I try to get attention by clearing my throat and wait. Nothing. Next I try coughing and wait some more. Still nothing. My arm is now getting tired*

> *and I begin to feel invisible. I wonder what the teacher is doing at his desk. Feeling annoyed and somewhat neglected, I finally speak up, "Mr. Boyd I have a question over here."*

While this scenario could happen in any classroom, it also reveals a student's experience of being sidelined by classroom management software. As the software dislocates attention of the teacher away from students and draws the teacher toward the contents on the computer screen, the teacher is perceived as distant and inattentive. The teacher's habits and routines, influenced by the immediacy of the images on screen as given by the software, shapes how the teacher is present to her students. Teacher and students may coexist in the same physical room, but the teacher's presence is experienced as not immediately accessible. The teacher's presence is perceived by the student as absently present.

As the software quietly alters how the teacher is present to her students, it is not just the student body that can get pushed to the sidelines.

> *My grade 10 computer class was set up so that everyone worked independently at their own pace. All of the instructions for our assignments and tests were available on the school network drive. Most of the time the teacher would sit at his desk. I was pretty good at computers and didn't have many questions so I just worked through the modules on my own. Other than that I don't remember much about that class. I can't even recall the teacher's name.*

Here the student perceives the teacher as residing on the periphery of his classroom experience. By relying on the software and relinquishing his authority as the significant teaching presence in the room, the teacher inadvertently alters how he is present to his students. The teacher and student might be working towards the same end, but for the most

part they do so disparately from the confines of their own workstations. They are together in the same room but yet very much apart. While it is not uncommon for teachers to work at their desks while students are busy working, when this becomes an on-going arrangement, the teacher's presence is experienced as very much off in the distance.

The phenomenon of bodies lost on the sidelines is not exclusive to classrooms with classroom management software. When a teacher is busy helping a student at the front of the class, it is very easy to miss a student who has his or her hand raised in the back of the room. While the child might feel like he or she is waiting on the sidelines, this experience is very different than waiting on a teacher who is absently present at a computer desk. Waiting for a teacher to finish with another student is similar to a sports player that has been sidelined due to an injury or rule infraction. From the sidelines, both student and athlete may not be part of the immediate action, but they also know it is just a matter of time before they can leave the sidelines and become part of the action. While at times it might be incredibly frustrating to wait in the sidelines, there is an understanding of why they are temporarily occupying the space of the sidelines. Perhaps most importantly, an end is in sight. Whereas when one is sidelined by classroom management software, there is no such awareness.

The Cyborgian Shoulder Tap

The difference that classroom management software can make is not only a matter of technologizing the watching of students, it also shapes how teachers communicate and deal with problems as they arise in the classroom. If a student is tangentially moving off topic, classroom management software offers the teacher multiple options for addressing the problem. The teacher can send a private message to the student, blank out the student's screen, limit Internet browsing capabilities and/or limit access to specific computer

applications. When classroom management software is used in this manner, it enables the teacher to watch over and correct student behavior without directly confronting students. On the surface this may be very appealing for teachers who wish to avoid potentially difficult and uncomfortable situations, however managing problems from a distance does not come without loss.

Classroom management software calls on teachers to address and solve problems from a distance in much the same way that it invites teachers to monitor student activities from a distance.

> *While scanning students' miniature screens I notice something doesn't look right so I enlarge it to get a clearer picture of what the student is up to. I see that the student has an extra browser open and its contents are not related to the current assignment. Quietly, discreetly, and without warning, I close web browser. I notice the student sheepishly look up in my direction. We exchange a brief glance but no words, and just like that our shared moment is over.*

The difference that classroom management makes is not solely about watching students from a distance, it is also about communicating, intervening, reprimanding, censoring, and controlling student behavior from a distance. As these complex human interactions are increasingly mediated by the software, they not only become oversimplified, in some cases common everyday human interactions wither away. Constant reliance on classroom management software to communicate with students compromises opportunities for both the teacher and student to express themselves through their corporeal, bodily being. The software does not acknowledge the human being on the other side of the computer screen in the same way that a simple face-to-face conversation or discussion does, leaving no

room for student negotiation or explanation. When communication is mediated in this way any meaningful exchange of ideas and opinions becomes significantly limited. In addition, there are limited opportunities to learn important life skills such as how to pick up on nonverbal bodily cues like eye contact, proximity, and gestures. It precludes opportunities to personally appeal to a student through humour, empathy, and compassion, which happen to be the very things that bring out our humanness and individuality. As common everyday interactions with students are increasingly outsourced to classroom management software, problems can be addressed without a single word being exchanged, forever changing the social and relational fabric of the classroom.

It is not uncommon for teachers to feel that they are constantly being put on the spot, but to some degree classroom management software seems to change this. When a teacher is able to close a web browser without warning she no longer needs to worry about getting dragged into student negotiations or the possibility of the student choosing not to comply with a verbal request. When classroom management software removes the teacher from the immediacy of the situation, it affords the teacher time and space to deliberate before reacting. While this extra breathing room can be beneficial, in that it enables the teacher to consider all options before responding, the ways in which the teacher can respond are predefined, limited, and mediated by the software. The arsenal of corrective actions that the teacher has at her disposal are largely predefined responses that have been built into the software by its developers. Though its design, the software encourages depersonalized, semi-automatic, one size fits all responses. To grasp the difference between the teacher's reassuring hand on the shoulder and the cyborgian shoulder tap of classroom management software, all one needs to do is consider the typical corrective responses that a teacher might send through the

software's messaging system. These pop-up text messages are typically made up of "one-liners" like: I see you, Get back to work, Do you have a question? These types of depersonalized, automatic, one size fits all responses do not fully acknowledge the human being on the other side of the computer screen, leaving little room for negotiation, explanation, or discussion. Compared to face-to-face conversations, meaningful communication and the exchange of ideas, opinions, is significantly limited when communication is mediated in this way.

As teachers become habituated to classroom management software, it not only becomes a regular part of their classroom management strategy, they also may come to rely and depend on it. This teacher's account of the time when her classroom management software system crashed, reveals a great deal about how this software shapes who she is as a teacher.

> *When I first realized the system crashed I felt a wave of anxiety hit me. Even the well behaved students had quietly wondered off task. Trying to appear composed I told everyone that playtime was over and that it was time to get back to work. Most students seemed to comply, but I could not shake that feeling of uneasiness. I quickly walked back to my computer station and sat for what felt like an eternity waiting for the system to reboot. As I watched the loading symbol on the screen I felt myself pleading with the software: please work, please work, please work!! With the appearance of the familiar interface finally came relief. Only after I clicked on a few icons to ensure everything was operation did complete calmness set in.*

Even though this teacher's pedagogical instincts kick in and point her in the right direction, she was clearly not confident in her ability to successfully manage the class without the

software. It appears she has become accustomed to managing problems through the distance of software and the comfortable safety buffer that it provides. Adams (2008) reminds us that habituation is not simply about letting the technology slip into the background, it is also about "slipping into the easiest, most accessible, efficient path and seldom thinking to diverge from it. In this way, habit is both ability and disability" (p. 85). Once teachers becomes accustomed to managing problems from the safe distance of the computer desk, it may become very difficult to quickly revert back to thinking on one's feet and dwelling in the realm of pedagogical immediacy.

Indeed, the more habituated we become to a technology the more vulnerable we feel when it breaks down. This teacher's confidence in her ability to manage the behavior of her students is very much dependant on the seamless operation of the classroom management software. It is only when the system breaks down and she is unwillingly thrust into a state of vulnerability that her dependancy on the technology is revealed. Of phenomenological significance here is that regular everyday interactions with this technology are primarily practical and instrumental in nature, but when classroom management software is forcefully plucked from the hands of the teacher, she is forced to see the technology in a new light. This is reminiscent of Heidegger's (1982) hammer which shows up as "ready-to-hand" disappearing from our immediate attention as we concentrate on the task of hammering nails; but when the hammer breaks and refuses to do its job it suddenly shows up as "present-at-hand" and we become consciously aware of the object in our hands. Indeed it is easy to give little thought to the tools that we use, that is until they malfunction and no longer work as expected. In this way "breakdowns and accidents tend to reveal taken-for-granted human-technology-world background relations" and "uncover hidden details of a technology's

amplification/reduction structure" (Adams & Thompson, 2016, p. 16). But the question remains: how might classroom management software technology selectively augment or amplify certain aspects of human experience while diminishing others? Exactly what is lost when the work of managing a classroom is mediated by a machine?

This teacher's sense of powerlessness and loss of confidence provides a glimpse into the amplification and reduction structures that are at play when classroom management software is used to address and solve problems in the classroom. Clearly, the introduction and use of this software to manage classroom behavior is not a simple matter of automating existing practices. Rather, the classroom and the people in it have been forcefully and significantly shaped by technological mediation. With this technology comes new forms of communication and new types of student and teacher interactions. The technical breakdown reveals a teacher who has come to rely on the software and now has difficulty dwelling in pedagogical immediacy. Yet this breakdown provides only a glimpse into the difference that classroom management software makes. To fully grasp what may be lost when teachers become overly dependent on classroom management software we must consider what a classroom without this technology might look and feel like.

If one would walk into a typical classroom of a teacher who has never used this software before, the chances are that you would never find a panicked teacher who is lamenting over the inability to view and control everything that students do on their computers. Ideally, you would find a teacher who commands the classroom through referent power, trust, and respect. Referent power requires strong interpersonal skills and the ability of the teacher to make children feel cared for and special in the eyes of the teacher. These types of teachers primarily lead through collaboration and influence rather than command

and control. These pedagogically sensitive teachers are attentive, in touch, and in-tune with the students in her care. They address and react to student behavior in subtle but powerful ways such as using physical proximity, body language, eye contact, verbal requests, and even humour. Unlike classroom management software, this teacher always considers the situational context of each problem as it arises, recognizing that all situations are not black and white. Most importantly, you would see a teacher who engages and interacts with students in ways that recognizes each child as a unique individual. There are no 'one size fits all' responses in this classroom. Each response is carefully crafted taking into account the strengths and weakness of each child. Above all the children in this classroom feel cared for and supported by the teacher with whose care they are entrusted. Of course, not all teachers who teach without classroom management software necessarily rely on referent power to manage their classroom; however it is important to point out that classroom management software is most compatible with authoritarian approaches to classroom management. In fact, not only is classroom management software more compatible with highly controlling pedagogical approaches, in some cases the technology may in fact facilitate and shape new forms of authoritarian methods in the classroom.

At the same time it is important to recognize that just because a teacher relies on classroom management software to watch over students this does not mean that pedagogical relationships can't flourish. Yet there is no denying that electronic mediated communication presents unique challenges that face-to-face encounters simply do not. To understand perhaps the greatest challenge of virtual encounters it is helpful to turn to Levinas' (1969) ethical relation of the face. "The face is a living presence; it is expression. . . . The face speaks." (Levinas, 1969, p. 66). When we encounter the face of another, there is no restriction or limit

on our responsibility for the face. “The face opens the primordial discourse whose first word is obligation” (Levinas, 1969, p. 201). Even before a single word is said or we are able to reflect on the situation at hand, we are made responsible for the Other because the infinite call of the face holds us hostage. In this moment of epiphany we become ethical subjects who are responsible for the well-being of the Other. Virtual encounters however are very different,

> (t)hrough the reports, screens, e-mail messages, and the like, the Other is re-presented and thematic ordered, progressively silenced. The possibility for fundamental (re)consideration are circumvented. The very source of the ethical relation, the trace of the Other, that disturbs, that calls me into question, fades. (Introna, 2003, para. 17)

Introna explains this phenomenon as screen de-facing or the fading out the face (Introna 2003). By revealing the world according to the screen’s own categories, technological mediation reduces the opportunity for one to be held hostage by the face of the Other. Or as Stoddart explains (2010), “epiphany is in danger of being displaced by mere appearance” (p. 30). Compared to face-to-face encounters, when human bodies are mediated through technology this offers a greater potential to diminish one’s ethical responsibility to the person on the other side of the screen (Introna 2003, Stoddart, 2011). So when a teacher loses sight of a student’s face, it is not just a matter of missing out on nonverbal cues that may aid in communication. When technological mediation fades out the teacher’s source of the ethical relation (the face), the nature of the human and pedagogical relation is altered, making the classroom a very different place. This transformation is not just about certain classroom

management strategies being amplified or diminished. When the ethical relation is disturbed, it alters how children are present to teachers and vice versa.

Even though teachers instinctually know the importance of personal interactions and building relationships with students, in those moments of dealing with a busy, chaotic classroom, the ability to opt out of potentially tense and uncomfortable interactions can be very tempting.

> *After a long and tiring week the students were finally well behaved so I rewarded them with access to a few educational computer games for the last few minutes of class. Then without warning an argument broke out between Daniel and Ryan, who were fighting. Without hesitation I reached for my mouse and with a few effortless mouse clicks I removed access to the game folder. Problem solved.*

In the midst of managing a busy and sometimes chaotic classroom, it can be very tempting for teachers to use classroom management software as a substitute for personally dealing with problem students. While it is true that the teacher's problem appears to be 'solved', for Daniel and Ryan losing access to the computer games has not addressed their underlying problem. The use of the software might have helped the teacher avoid an altercation with Daniel and Ryan, but it did not help the boys resolve the problem at hand. If anything it served to avoid addressing the problem altogether. In this way, classroom management software changes the dynamic in the classroom because it enables the teacher to be passively active in dealing with problem students. This aspect of classroom management software points to the way in which "[t]echnology is the knack of so arranging the world that we don't have to experience it" (Frisch, 1957/1959, p. 178). By enabling teachers to address problems without ever directly confronting them, important learning opportunities may be lost. Even

though development of interpersonal skills such as cooperating with peers and respecting others are essential life skills, both the teacher and students lose opportunities to learn how to deal with interpersonal conflict. Clicking a button from across the classroom may seem to be the easier choice in the short term, but it is questionable whether this simple technical gesture is really in everyone's best interest over the longer term.

When classroom management software operates in the background, this can cause teachers to believe that they no longer need to watch over their students because nothing can get past the all-seeing gaze of the software. It is not uncommon for teachers who have classroom management software to sit at their desk working on grading or other administrative tasks as this teacher's experience illustrates.

> *The report card deadline is approaching and I still have two class sets of exams to grade. So, once I get the students started on their task for the period I return to my desk to do grading. I stay at my desk grading for the remainder of the period, while students quietly work on their assignment.*

The problem with tools like classroom management software is that it gives teachers the false impression that the responsibility for watching over students can be outsourced to the computer. As this software enables the automation of classroom management at unprecedented levels, we see human interaction becomes replaced with interpassivity. Interpassivity, or the state of passivity in the presence of potential interactivity, is a threat to teaching as we know it. When a teacher outsource their responsibility for watching over children to a machine, many important aspects of teaching become overshadowed. Teachers are not merely police officers; they are also caregivers, sources of encouragement, and even confidants, often playing a key role in the development of a child's self-esteem and identity.

Teachers don't just teach, they inspire; but when the task of monitoring students is outsourced to a machine many of these important aspects of teaching become silenced. For decades teachers have subtly exerted their teacher presence through proximity, voice, language, gestures, and the teacher's reassuring hand on the shoulder, but classroom management software changes all of this. When teacher passivity replaces teacher interactivity the classroom inevitably becomes a different place.

> The pedagogical hand no longer rests its reassuring presence on a student's shoulder, or gestures meaningfully in response to a student's question. Rather, the 21st-century cyborgian hand rests on a mouse, in the grip of panoptic software that technologises classroom management, while silently divesting the teacher of the pedagogical relations that once defined her everyday teacherly practices. (Adams, 2011, p. 269)

In the process new pedagogical routines and practices emerge, teacher presence takes on an entirely new meaning, and the nature of classroom management is completely transformed. When taken-for-granted common everyday student interactions are replaced with computer mediated forms of watching and superficial one-sided forms of communication, opportunities to build trust are lost, endangering the development of healthy pedagogical relationships. As the software invites the teacher to watch over and manage her class from the distance of the computer desk, teaching as we know is reshaped into the vision of the classroom management software. "The teachers' activity patterns and meaning structures are being quietly in-formed — conformed, deformed, and reformed — by the software architecture she finds herself inhabiting and by which she is inhabited" (Adams, 2011, p. 286). The need for traditional classroom management skills and techniques such the use of proximity and nonverbal cues fade away as the teacher increasingly commands the class with tap of a

button. With the disruption of these classroom management practices comes the endangerment of valuable and meaningful ways of knowing and being in the classroom. This represents the danger of haphazardly embracing new surveillance technologies in schools without pondering what the unintended consequences might be. Deliberate or not, technology is often designed in a way that opens certain possibilities and closes others (Feenburg, 1999; Winner, 1986; Ellul, 1990).

As the teacher's caring reassuring hand on the shoulder is replaced by the distant cyborgian shoulder tap, the presence of the living breathing teacher is overshadowed by a software which commands new ways of communicating, intervening, reprimanding, censoring, and controlling student behavior from a distance. When the teacher is retrained in the activity patterns and routines of the software, teacher presence can take on an entirely new meaning. Teacher presence is intrinsically linked to how a teacher communicates who she is, what she believes about teaching and learning, and her philosophy of teaching. It's how she communicates passion, excitement, and enthusiasm for teaching and the content to being taught. This enthusiasm can be contagious and leave an everlasting impression on students. Thus, it is important for teachers to recognize the command that classroom management software has over their daily routines and practices. If a teacher surrenders full authority to the software as the significant presence in the room, this could potentially touch the very core of a teacher's way of being in the classroom. Teacher presence could potentially become overshadowed, and even endangered, by the goals and purpose for which the software was designed. These goals emphasize student productivity, time on task, and catching anyone who fails to conform. In this way the software calls on the teacher to act and

respond in its own vision, altering not only the forms of communication at her disposal but also how the teacher is present to her students and how they are present to her.

The difference that classroom management software makes is not trivial nor inconsequential. As Borgmann (1984) reminds us, the disburdenment of technology also comes with great loss. As teachers' corrective responses become automated and interactions are reduced to mere glances across the room, the fabric from which the pedagogical relationship is fashioned becomes altered. Opportunities to engage with children are lost and in some cases direct contact with students becomes completely optional, making authentic communication and conversation challenging and at times untenable. As social relation transactions take place through classroom management software, student bodies are replaced by electronic body doubles that barely provide a glimpse into the world of the child who is sitting just across the room. As the presence of the caring teacher is replaced by the all-seeing judgmental gaze of classroom management software, the space of the classroom becomes a very different place.

Fortunately there are varying degrees of the cyborgian shoulder tap and not every teachers' way of being in the classroom will necessarily be dramatically altered by the introduction of a tool like classroom management software. In fact most teachers who teach in computer lab settings with classroom management software likely don't solely rely on classroom management to watch over and communicate with students. Pedagogically sensitive teachers who are in tune with their students intuitively know the importance of tending to individual student needs and when a human touch is needed. At the same time, this does not make the unintended consequences of these tools any less significant. Any tool that has the potential to radically alter the social and relational fabric of the classroom should

not be dismissed as just another tool in a teacher's arsenal. Classroom management software is not simply a tool working in the background, rather it has the potential to forcefully shape, alter, and transform the classroom as we know it. Thus as these tools enter the school environment teachers must be aware of the nature of the co-constituting technical relation that is at play. In Ihde's (1995) words , "there are no neutral technologies… they are transformational in that they change the quality, field, and possibility range of human experience…" (Ihde, 1995, p. 33). Classroom management software does not just represent an alternate way to watch over students, it may reshape teachers' activity patterns, routines, and even the pedagogical relationship. This is not to be taken lightly because the pedagogical relationship is what is at the heart of teaching.

The intent of drawing attention to the human-(surveillance)technology-world relation and the amplification and reduction structures that come with it, is not to suggest that we should necessarily abandon these tools. The utility and benefits of classroom management software cannot be ignored. Rather the intent is to draw attention to the unintended consequences of these tools that might otherwise go unnoticed. Most teachers don't have the luxury of time to ponder about the many ways in which tools like classroom management software might reshape the ways in which they perceive their students or the types of pedagogical choices that they make in their classroom. Armed with a new understanding of the unintended consequences and the difference that classroom management software may make, it is now time to turn to our attention to the taken-for-granted attitudes and beliefs regarding the electronic surveillance of youth. Having reflected upon the human-(surveillance)technology-world relation of classroom management software, next we will turn our attention to the hermeneutic social and cultural context in which surveillance

technology operates. The question is no longer whether tools like classroom management software make a difference, but rather whether the commonly held assumptions and beliefs regarding the use of surveillance technology in schools still hold. It is now time to reconsider how and why we are using these tools in schools, a task which we will embark on in the following chapter.

Chapter 5: Unveiling Our Taken-for-Granted Technological Attitude

Surveillance has become so entrenched in our lives that we are now living in what Lyon (1994) calls a "surveillance society", whereby systematic surveillance has become a regular part of our daily lives. In the public sphere video surveillance is increasingly commonplace in airports, shopping malls, banks, roadways, and schools. Not only is this form of electronic surveillance accepted in the public sphere, many other kinds of surveillance technology are increasingly taken-for-granted in our private lives as well. With GPS technology built into cellphones it is now easier than ever to track the whereabouts of loved ones. Both at home and school, youth's online behavior is routinely tracked using Internet monitoring and filtering software. Nowadays, parents, schools, and even corporations track youth on both personal and school issued devices, right down to every button pressed and every keystroke made.

Surveillance of students by school officials has even crept into the realm of monitoring students' while they are in the privacy of their own homes. There are multiple tools on the market that have been developed to scour and analyze public social media posts made by students on personal blogs, Facebook, Twitter, and Instagram accounts. These tools analyze phrases and keywords that might suggest suicidal thoughts, cyberbullying, vandalism, drug-use, illegal activity, terrorism, and even obscenities. Such software allows school officials to track behaviors that violates a school's student code of conduct and requires intervention. Glendale Unified School District of California has been using a social media monitoring system called Geo Listening since 2013. Initially there was public outcry because there was concern that the new policy was not transparent and that it infringed on student privacy, but according to school officials there has been little resistance since then

(Corrigan, 2014). Glendale Unified School District is not alone in tracking social media posts made by students; schools in Florida and Alabama have adopted similar programs. Orange County School District started using Snaptrends in 2015 to monitor students' social media feeds (Hamilton, 2016). Huntsville City Schools went as far as to hire a retired FBI agent to assist with school security and review students' social media posts. School officials assert that the monitoring of social media posts makes students safer because it is part of an early intervention program intended to prevent things like suicide, cyberbullying, and violence against students. However, not all social media monitoring systems are used for the purpose of protecting children. In some cases these systems are used to protect the reputation of the school. For example, one social media monitoring company, Varsity Monitor, boasts that it can be used by athletic departments to ensure that athletes adhere to their code of conduct and do not compromise the reputation of the institution (Varsity Monitor, 2017). Their website also states that Varsity Monitor can be used to evaluate the character of prospective students and athletes even before they are admitted into the program or school. While social media monitoring tools may provide solutions to many common problems that educational institutions face today, it also raises many ethical questions. For example, there are many questions concerning the kind of personal information that should be collected, how it should be stored, who should have access to it, and when it should be deleted. This includes issues surrounding transparency and full disclosure to those being watched, including access to any personal data that has been collected.

Even though electronic surveillance raises many ethical questions that simply do not exist to the same extent with human surveillance, there is no sign that we will veer off the surveillance technology path any time soon. We live in a society that seems to be infatuated

with technological fixes to our problems. If there is crime, we put up cameras. If there are drugs, we bring in the drug testing kits. If there are attendance problems, we develop RFID chips or adapt GPS technology to track student movements. The cycle is never ending. If there is cyberbullying, we electronically monitor social media posts. If young children fail to get off at the correct bus stop, we adapt portable iris scanners to help keep track of these youngsters' whereabouts. If there is the threat of gun violence, we put up metal detectors and even more cameras. Who knows what other technological fixes may be in our future?

The allure of technology's promise to solve all manner of problems and to do so efficiently cannot be understated. There is a prestige and aura around technology that often makes us believe that we should seek technological solutions even when something very different is called for. This is precisely what Heidegger (1977) was getting at when he famously proclaimed, "the essence of technology is nothing technological" (p. 4). He argued that technology emerges from a *technological attitude* that exists prior to any technology's existence and that it is this view that largely defines our relationship with technology. It is the attitude that technological advancement inevitably represents progress and that high tech solutions are somehow inevitably better. The problem with this overly optimistic view is that it blinds us to what Tenner (1996) calls the revenge of unintended consequences. Some obvious examples of this include technology's impact on the environment, quality of life, intensification of work, and closeness to nature. When it comes to the use of surveillance technology to closely monitor youth in all facets of their life, we have yet to ascertain exactly what those unintended consequences may be.

Coming to grips with the unintended consequences of surveillance technology is an important first step; however, we also need to reconsider the multiple ways that surveillance

technologies are employed in schools. When we think about surveillance technology solely in terms of increased safety, convenience, efficiency, and productivity, we fail to recognize the many ways that school environments differ from other public places and institutions. Schools are places of growth and development, it is where children learn to behave and come to understand their role in the broader society. The strictly instrumental mindset which emphasizes productivity and efficiency, fails to recognize the nature of the pedagogical relationship and the unique developmental needs of children. The socializing role of schools and the fact that schools are filled with young people who are in the midst of forming personal identities, requires that we consider the use surveillance technology in schools differently than other public places. After all surveillance is not homogenous. To the contrary we must consider specific sites of surveillance separately and take into account the complexity of different surveillance practices in all areas of social life (Lyon, 2007, p. 25).

The development and adoption of surveillance technology is not going to stop any time soon, so we must critically examine whether surveillance technology truly lives up to its promise of improving the educational environment. This requires challenging and questioning the common assumptions and beliefs that surround the use of surveillance technology. In the spirit of opening up critical discourse around the use of surveillance technology to watch over youth, I explore and challenge the common assumptions and taken-for-granted attitudes surrounding the use of these tools. The assumptions and commonly held beliefs that require greater scrutiny include:

1. Surveillance technology is necessary to keep children safe and alleviate parental fears.

2. Surveillance technology in schools is the same as surveillance in other public spheres.
3. Surveillance technology is necessary to help children make the right choices.
4. Technological school surveillance systems complement everyday life by simply automating existing processes and practices.
5. Surveillance technology inevitably improves the quality of education because it increases students' time on task.
6. If you have nothing to hide to you have nothing to fear.

Many parents and school officials staunchly assert that surveillance technology is not only required to keep children safe but that it is the responsibility of adults to use these tools as a means to achieve this goal. I however have a very different perspective. As an educator and mother I firmly believe that we need to be cautious about overprotecting children. Research has shown that college students whose parents exercised a high degree of intensive monitoring had "higher levels of depression and decreased satisfaction with life'' which was attributed to limited autonomy and competence due to cosseting parenting styles (Schiffrin et al., 2014, pp. 554-555). Not only do children require a degree of privacy in order to grow into autonomous adults who can think for themselves, as adults it our responsibility to ensure that a child's right to privacy is respected. Rather than watching every move that children make, adults should create safe opportunities for children to experience periods of independent play. It is my position that the uncontrolled and continuous overuse of surveillance technology to watch over youth not only disrupts trust based relationships, but may also compromise the healthy development of the children who are in our care. Moreover, these tools have the potential to undermine social relations and to create of a culture that lacks a

solid moral foundation. Of course, the utility of surveillance technology in schools is not in question, but this does not mean that we should blindly accept the use of these tools without critically examining the unintended consequences of their use. Winner (1986) warns that we must awaken from our "technological somnambulism" and reject the idea that technological innovation is necessarily equated with progress and improvement. He urges us to consider the consequences and wider implications of technology in our lives. In a similar vein, Adams (2012) warns us how habituating to any technology represents a "retreat of critical discourse regarding its presence" (p. 268). As preface to the discussion that immediately follows, the reader should thus be aware that my perspective on these matters has also informed this chapter.

Assumption 1: Surveillance technology is necessary to keep children safe.

Without endorsing the notion that that we live in a 'culture of fear' (Furedi, 2002), it is safe to say that parental fear is very real (Gabriels, 2016). In fact, despite a worldwide reduction in crime in recent decades, there is evidence to suggest that fear is on the rise (Fahlquist, 2017). Fear of crime, in general, has been studied by researchers for decades and is one of the most studied topics in contemporary criminology (Doran & Burgess, 2011). While fear of crime is not always a bad thing, such as when it inspires the protection of children from legitimate threats, it can be problematic when decisions are made on behalf of children based on irrational fears. To help us understand parental fear, an important first step is to sift through all the contradictory messages concerning the dangers that lurk outside our home. For example, some scholars suggest that the dangers we face are over-hyped and fear of crime is a more widespread problem than the problem of crime itself (Burgess & Doran, 2011). Whereas others have gone as far to suggest that we are in state of moral panic

regarding the dangers that youth face today (Taylor, 2013; Monahan, 2006). So the question is, exactly how legitimate are parental fears and do these fears justify the intensive surveillance of children?

Overall studies have shown that the Western world has actually become a much safer place to live (Pinker, 2011). In Canada during the decade of 2004-2014, the violent victimization rate fell by 28%, the household victimization rate decreased by 42%, and the rate of theft of personal property declined by 21% (Canadian Centre for Justice Statistics, 2014). This downward trend in crime is also true for youth crime. For example, in Canada between 2014 and 2015, the Youth Crime Severity Index (YCSI) decreased by 1% and the youth crime rate dipped 2% (Canadian Centre for Justice Statistics, 2015).

Interestingly, while statistical data shows that crime in Canada is on a downward slope, public opinion polls have suggested that Canadians believe otherwise. In one forum poll conducted for the National Post, 54% of the 1,639 Canadians who were questioned agreed that crime was on the rise, with only one-third of the respondents indicating that they thought crime was decreasing (Edmiston, 2012). Even though the crime rate in Canada had dropped 5% from the previous year, the majority of Canadians still thought otherwise, suggesting there is a disconnect between the public's perception of public safety and the reality. This is phenomena is not unique to Canada. The annual Crime Survey for England and Wales (CSEW), conducted by Britain's Office for National Statics (2015) reported that:

> While the level of crime measured by the CSEW has been falling since a peak in 1995, the survey has consistently shown that most people perceive that crime across the country as a whole has been rising. This contrast has continued with the 2013/14

> survey showing 61% of adults thinking crime had gone up nationally in the last few years. (p. 2)

Similarly, despite the FBI's Uniform Crime Reporting Program stating that between 2008-2015 U.S. violent crime fell 19% and property crime rates fell 23%, a recent PEW Research Center survey of 3,788 adults reported that 57% of those questioned thought crime had gotten worse during that time span (Gramlich, 2016). Similarly, in Japan people perceived public safety to be deteriorating, despite a 40% decrease in crime from 2002 to 2010 (Fahlquist, 2017, p. 126). Additionally Doran and Burgess (2012) have made note that this trend is also true for numerous cities in the United Kingdom, Switzerland, New Zealand and Australia. This seemingly wide spread phenomenon has become known as the "paradox of fear" (Doran & Burgess, 2012, p. 2).

Despite the abundance of negative messages that we might receive from media about the world becoming a more dangerous place, there is much evidence to suggest that the dangers our children face may be over-hyped. The over saturation of media coverage of rare instances of violence in schools is just one example of this (Taylor, 2013; Monahan, 2006). In reality, statistics tell us that violence in Canada is nothing close to an epidemic of any kind. In fact mass public shootings of any kind are relatively rare in Canada. For example, between 2000 and 2014 Canada recorded only three public mass shootings in public areas, whereas during the same period in the US there were 133 public mass shootings reported (Schilkraut & Elsass, 2016). To put things in perspective, Americans are almost 70 % more likely to die from a gunshot than Canadians are to die in a car accident (Paperny, 2015). Interestingly, even though the risk of gun violence in Canada is relatively low, Canadians are bombarded with American media coverage of public mass shootings and gun violence. This

is significant because research has found that frequent exposure to media coverage about violent crimes may lead to an overestimation of risk, and this is true even in cases where the incident reported is a rare occurrence (Ceccato, 2012).

Interestingly both the media and high-tech surveillance companies profit immensely from reinforcing the notion that there is an epidemic of school violence and that online dangers are rampant. Some obvious benefits are increased sales for the surveillance industry and increased ratings for media outlets. What is perhaps less obvious is how a number of media outlets have direct financial ties to the surveillance industry. According to Monahan (2006), the AOL TimeWarner CNN conglomerate is in partnership with General Motors, Hughes, Philips Electronics, and Raytheon (p. 119). This is notable because Philips produces many types of surveillance technologies including video analytics, biometrics, facial recognition, IP Video Integration and Video forensics (Philips, 2017), while Raytheon manufactures thermal imaging equipment for police, military, and boarder control (Raytheon, 2017). Other examples cited by Monahan (2006) include MSNBC being owned by General Electric, who happens to produce an entire line of surveillance technologies for public and private sectors. Admittedly, this relationship between media and the surveillance industry does not mean there is a collaboration or conscious effort to instill fear for profit. Yet intentional or not, it is evident that there is money to be made by propagating hypothetical risks and reinforcing the many possible dangers that may potentially be lurking outside our homes.

Indeed, much advertising by surveillance technology companies is aimed at playing on fears and reinforcing the need to protect children from danger. Online monitoring software providers flood parents and school officials with claims about the dangers of

the Internet. The Qustodio website for example emphasizes how a child's digital world is not threat free and provides frightening statistics about cyberbullying, cyber predators, and sexting (Qustodio, 2017). In general, youth are presented as vulnerable and in need of adult protection. Qustodio is not the only online monitoring software that targets parental fears. Splashed across Verity's website you will find the promise that "Verity gives parents peace of mind" (Verity, 2017). In many ways,

> (s)urveillance today is offered as a commodity that will provide protection and security. It is something to be bought; it has a price. It is also to be consumed; we desire more and more (not necessarily because it works but because it fits the currently reigning ideology). (Lyon, 2003, p. 93)

Not surprisingly, these surveillance companies not only instill fear, they conveniently offer a solution to allay the manufactured fear for concerned parents and school officials. The resounding message is that if you care about children you must watch over them every moment in order to keep them safe. Any adults who fail to do so are irresponsible. This has resulted in immense pressure for school officials to closely monitor what children do online at school. The narrative is that any school official who cares about students must dutifully watch over them to keep them safe from harm. Subsequently any invasion of youth's privacy becomes construed as justified and necessary for safety and security.

Interestingly research has demonstrated that Canadian youth are not as vulnerable and naïve as many monitoring software companies would have us believe. To the contrary, youth have developed many strategies for avoiding potentially harmful situations when online. For example, young Canadians have learned to immediately click away from inappropriate sites, actively avoid interacting with 'creeps' online, and to be very cautious about revealing

personal information (Steeves, 2012a, p. 17). Similarly, a significant number of Canadian youth "have some level of advanced proficiency with respect to… blocking unwanted people (and) using privacy settings" (Steeves, 2014, p. 4).

Without a doubt, Internet safety is a valid concern for parents and school officials. In part, this is why topics such as digital citizenship, online safety, and cyberbullying are now integrated into the curriculum and are being taught in Canadian schools across the country (Hoechsmann & DeWaard, 2016). Formal education, in combination with media coverage and parental involvement has resulted in a generation that is far more aware of the dangers associated with the Internet than its predecessors. Youth interviewed as part of the Smartmedia research project *Young Canadians in a Wired World Phase 3* (2012b) indicated that they feel most comfortable online when given the space to develop their own identity, while at the same knowing that adults are there for support if needed (Steeves, 2012b). Given that more of today's students understand how to stay safe online compared to the previous generation, it is not surprising that many of them do not recognize Internet monitoring software as something that would make them feel safer online. For many of these students, surveillance technology has very little to do with increasing personal safety or security but rather it is perceived as a form of control and mistrust (Steeves, 2016).

The way in which the electronic surveillance of youth brings new narratives of fear, control, and mistrust, is a serious reason for concern. What is even more troubling is that the very devices that are supposed to bring peace of mind not only fail to live up to their promise, in some cases they may actually instill fear or panic. Far from soothing worries, these devices may preoccupy and consume parents, thereby actually becoming a source of anxiety and stress. For example, in a baby monitor study it was noted that these technologies

"make parental anxiety the expected state of parenthood" (Nelson, 2009, p. 225). Similarly, simply having constant access to their child's whereabouts might actually increase parental concerns and fears (Fahliquist, 2013; Gabriels, 2016). In reference to the use of GPS tracking to care for Alzheimer's patients and children in daycares Herbert (2006) warns that:

> The decreasing expense of GPS devices may tempt some to use tracking technology as a replacement for more expensive nursing and childcare. However, market location devices and services do not constitute 'magic bullets' that eliminate fears regarding the safety and well-being of children and the disabled. Satellite-based information regarding the precise location of a patient or child is a far less effective means of protection than direct care. Furthermore, equipment failure or malfunction in such devices and services can increase anxiety, if not panic… (p. 415)

In fact, GPS tracking technology can never ensure the safety of a loved one, at the very most GPS technology is capable of reporting the location of a crime or accident after the fact. Even in cases where GPS technology is used in conjunction with mobile phone applications that are capable of sending real time alerts to guardians or concerned loved ones, this creates a false sense of security. The Eyewatch website, for example, boasts that "Eyewatch is the only known app in the world which captures audio before activation, records video after, and calls your Call Guardians one after the other on speakerphone automatically" (Eyewatch, 2017). What is less clear is however, is how a victim, in the midst of an attack or accident, would have the ability and means to set off the alert in the first place. Moreover, even in cases where an alert is successfully activated, the collection of video and audio evidence of a crime would do very little in the way of prevention. While advocates of this software might

claim the collection of evidence could serve as a deterrent, it is unclear how this is possible given that in most cases attackers would have no way of knowing whether the application is loaded on a victim's mobile phone.

In other cases the technology that is supposed to keep our children safe may actually put them at risk. The privacy and security vulnerabilities of RFID chips, which are increasingly used by schools and daycares, raises questions about whether this technology increases the safety of children. The concern is that RFID chips have a history of being easily hacked (Ozer, 2008; Hirsch, 2010). In 2006, “three million British e-passports were hacked by software written in less than forty-eight hours with an RFID reader bought for about five hundred dollars” (Ozer, 2008, para. 9). The same year researchers from University of Massachusetts Amherst demonstrated a technique for intercepting credit card information using $150 of readily-obtainable computer and radio components. Similarly, security researcher Jonathan Westhues showed the vulnerability of RFID-embedded entry cards, when he gained access to the California State Capitol (Hirsch, 2010). A decade later not much changed according to the Business Insider, which reports that hackers can break into just about any office that uses unencrypted RFID technology with common electronics bought on Amazon (Szoldra, 2016). A simple Internet search on how to hack RFID technology will result in numerous resources on the topic. Perhaps most concerning is that Hirsch (2010) warns that, anyone could “sit outside a school and upload all the information of the children inside without the school faculty, parents, or children knowing otherwise” (p. 413). If personal student information stored on RFID chips can be so easily compromised, this not only raises questions about whether RFID chips increase safety, it raises questions about whether RFID chips could actually endanger students. To this day the security of RFID

chips and concerns about identity theft continues to be a matter of debate among both supporters and opponents of RFID use in schools (Schropp, 2016). So even though the use of RFID chips have been introduced to soothe anxieties, they actually generate a new set of concerns because the RFID chips themselves could potentially become crime facilitators (Taylor, 2016).

RFID systems are not the only surveillance technology used in schools that has proven to have vulnerabilities that could potentially compromise the security of student personal information. Impero Education Pro, a widely used tool for monitoring and controlling internet use in UK schools, was reported to have a serious security flaw that could have compromised the personal information of hundreds of thousands of students (Ball & Adams, 2015). In reference to the software's vulnerability, Fox-Brewster (2015) warns,

> Technology that helps teachers monitor your children could be used by anyone, anywhere, to do the same. As schools increase surveillance, expect more avenues for outsiders to find a way onto their networks. (para. 16)

Although the company released a patch and no harm was reported, the incident highlights that the safety of children is not solely about protecting them from viewing inappropriate content online. It also requires that the systems used to watch over students are properly secured.

Security breaches of school video cameras have also raised concerns about the vulnerabilities of surveillance technology systems in schools. Recently, images recorded at the Rankin School of the Narrows in Cape Breton, New Brunswick, were posted on the Russian registered website insecam.org (Bradley, 2017). Unbeknownst to the entire school community images of youth in hallways, near washrooms, and in the school yard, were

displayed online for the world to see. While no damage was done this time, the security breach raises important questions about the use of video cameras in schools. According to cybersecurity expert, Daniel Tobok, "the problem of webcam images being streamed around the world is common" (Bradely, 2017. para. 13). Moreover, contrary to what many parents and school officials may believe, there is very little evidence that surveillance technology in schools actually makes youth safer. Research on the effectiveness of video surveillance cameras in reducing crime is inconclusive at best (Warnick, 2007). In a compressive meta-analysis of 22 studies in the United States and United Kingdom, Farrington and Welsh, (2003) concluded that 11 CCTV studies showed a desirable effect on crime, five showed an undesirable effect, while there was no clear evidence of effect in the 6 remaining studies. Furthermore, a major problem with these studies is that it is difficult to know whether deviant and criminal behavior was reduced overall or whether it simply moved to other areas.

Video cameras, Internet filtering technology, and RFID and GPS surveillance systems, are not the only form of surveillance technology used in schools that have questionable effectiveness. There is very little evidence that suggests metal detectors actually curbs violence in schools (Peterson & Skiba, 2000). In general, there is widespread agreement that surveillance in schools can never guarantee the prevention of violence, to the contrary it has been "known to increase violence, negatively impact a school's culture and reputation, and contribute to the loss of good teachers and good students" (Mukherjee & Karpatkin, 2007, p. 227). Instead of surveillance creating a greater sense of safety in and around school often "students describe feelings of danger and disillusion" (Weiss, 2010, p. 213). So even though surveillance technology is well intentioned and introduced to curb

fears, it may actually provide a false sense of security and in many cases may even induce greater anxiety and fears.

It is easy to take for granted that the use of high-tech security equipment is an invaluable part of creating a safe and successful school. Parents and school officials alike largely view these high-tech systems as a sign of being forward-thinking and modern; yet, there is little evidence that these systems actually make children safer at school. In fact, statistically "students are safer at school than they are in their own communities, in cars and even in their own homes" (American Civil Liberties Union, 2001, p. 109). Some of the misconceptions about the increase of crime may be attributed to the way in which the media over-hypes rare instances of school violence, making these incidents seem more common than they are. Additionally, the surveillance industry not only reinforces these perceived dangers, it offers easy and convenient ways to ease parental fears and concerns. But the fact is, today's generation of youth are not as vulnerable and naive as the surveillance technology industry would like us to believe. Rather than protecting and watching every move youth make, we should empower youth so they are able to develop the confidence and autonomy needed to make responsible choices and protect themselves in all areas of their lives.

Assumption 2: Surveillance in schools is the same as other public spheres

In today's surveillance society it seems that people in general easily accept many forms of overt surveillance. Most people don't think twice about giving up privacy in exchange for using free social media. The 1.94 billion active Facebook accounts and 70 million twitter active twitter counts worldwide is evidence of this (Statista, 2017). Similarly, for the most part video cameras in public spaces are widely accepted as necessary for added security. Rose (2014) for example asserts that, "I have personal experience with living under

surveillance every day, and I can attest that I find it far more reassuring than discomfiting'' (p. 104). In fact video surveillance cameras have become so ubiquitous that we increasingly disregard their presence. Even those who have concerns about civil rights and privacy seem to acquiesce the use of video cameras in public places.

The benefit of and need for surveillance in society is not in question. "To be safe, to feel protected from harm, is one of our deepest, most basic human drives, and over the centuries much of our tech innovation has focused on this drive'' (Rose, 2014, p. 100). This is especially true when it comes to protecting our children from the many lurking dangers that are beyond our control. Given our duty to protect youth, the increased use of surveillance technology in schools seems to be a natural extension of the surveillance society. The problem is electronic surveillance is becoming a central characteristic of modern childhood, yet we do not know what implications this may have for schools and the children that attend them.

Questions concerning the use of surveillance technology in schools are important because schools are not like other public places. For many students, next to their homes, school is the most important institution in their lives. Schools are not only devoted to learning, they are very much concerned with the growth and development of young people. School is where young people learn their broad role in society, including how to interact with others. The socializing role of schools must not be understated. Schools have a significant impact on the development of the belief systems of youth who will ultimately become the leaders of tomorrow. This socializing role of schools can have long lasting effects that reaches far beyond the walls of the school. Warnick (2007), for example, questions whether children who are exposed to surveillance from young age might become adults who are more

likely to accept surveillance in other public institutions or even their personal lives. According to Warnick (2007),

> what may be morally acceptable outside of schools is more problematic inside of schools. We should not only worry about the rightness or wrongness of actions in schools, but also the message the actions send and the model the actions set for students (p. 318)

Another concern is whether this could "create precedents that will lead to its application in undesirable ways" (Marx, 1998, p. 180). With these critical considerations looming in the background, it is important to seriously examine the many ways that the use of surveillance technology in the context of the school differs from other public places and institutions.

According to Warnick (2007), when it comes to surveillance, schools are ethically different than other public institutions in many ways. First, schools are composed of children not adults, which is important because it influences how we think about the balance of rights and responsibilities of children (Warnick, 2007, p. 318). Clearly, children do not have the same rights and responsibilities of adults. Adults have the responsibility to watch over students to keep them from harm, even if this means limiting their freedom at times; however, it could also be argued that adults have the responsibility to ensure the rights and freedoms of children are respected and children are not taken advantage of. Young children cannot advocate for themselves in the same way that adults can; they must rely on the adults with whose care they are entrusted to advocate for them. Another implication of this is that children are still developing their identity and world views so they may be more susceptible to the normalization of intense and constant surveillance. This is especially the case when compared to adults who have grown up in an era with significantly greater privacy in both

their private and public lives.

Another way that schools are ethically different than other public spaces is that schools are accountable to the larger democratic community (Warnick, 2007, p. 318). Unlike privately owned commercial businesses, which can make decisions based on what is in the best for the business owner, schools must act in the best interest of students. The best interest of students is not be mistaken for what is in the best interests of school officials, who may benefit from the convenience and efficiency that many of these surveillance technological solutions offer. Sometimes the easiest and seemingly foolproof solution is not always what is best. Additionally, since schools are more accountable to the public, this means that surveillance technology requires greater scrutiny than other public places. For example, there is a much greater responsibility in schools to ensure that policies regarding surveillance of students be transparent (Warnick, 2007, p. 318).

A perfect example of how a lack of transparency in schools can go wrong, is the webcam scandal that caused a suburban Philadelphia school district to deactivate a theft-tracking program that was secretly put on 2,300 high school student laptops. A lawsuit was filed against the school board after a principal punished a student using webcam photo evidence, which was secretly gathered in the privacy of a student's bedroom. According to the leaked Lower Merion School District Forensics Analysis (2010), well over 66, 500 distinct images of students in their homes had been recovered (p. 42). While many of these images were taken to locate lost or stolen laptops, thousands of those photos were taken for other purposes without students' knowledge. This lack of transparency resulted in a class action lawsuit which was settled for $610,000 and a subsequent civil suit that was initiated by a student who had 469 photographs and 543 screenshots taken in an eight week period

(Keizer, 2010). It appears transparency in schools pays off, and in the case of the Philadelphia Lower Merion School Board, a lack of transparency translated into a big payoff.

While it can be tempting to measure the magnitude of this mistake by the cost of the settlement, there is much more at stake than money. The initial purpose of the antitheft system was to locate lost and stolen school laptops, but the use of the technology somehow evolved into something altogether different. This fact alone is very troubling. Additionally, it did not matter that the covert surveillance of students was conducted with the best interest of students' health and safety in mind. In the case of the student who filed the initial lawsuit, the principal was concerned that the boy was popping pills (an allegation that has not been proven). Regardless of the good intentions of school officials, the public was outraged that surveillance technology was covertly used to essentially spy on students in their homes without their knowledge. Unlike other institutions, schools are accountable to the public to ensure that the surveillance of students in their care is transparent, but in this case that trust was clearly broken.

Schools also differ from other public spaces in that the trust relation that exists between a student and teacher is unique. Trusting that one will receive the correct change or that a product purchased is 'as advertised', is completely different than entrusting a teacher with a child's growth and development. More to the point, a degree of trust is *required* in order for learning and growth to take place. In fact, many would argue that a culture of trust is a critical component for the success of any school. Closely tied to the notion of trust is how surveillance is perceived by students. This is important because unlike other public places, like banks and shopping malls, students cannot simply exit a school whenever they wish. When it comes to surveillance in schools, youth simply have no choice in the matter.

This is important because when surveillance software is used to peer into every aspect of a student's virtual world, it can often alter the dynamic of trust between student and teacher.

Although it can be argued that both in-person and technological mediated surveillance sends a message of mistrust, Warnick (2007) asserts that a teacher's message of mistrust is "counterbalanced by other messages of concern and support" (p. 335). The role of a teacher goes beyond that of policing students. Teachers also mentor and nurture students, and in some cases they may even provide advice about personal matters. Unlike a living breathing teacher, surveillance technology never caringly look over the shoulder of a student with helpful intentions. The judgmental, watchful eye of the surveillance technology serves only one purpose, and that purpose is clear. As Lyon (1994) points out the all-seeing gaze "has everything to so with power and nothing to do with love" (p. 208). The fact that this software is needed and used at all, speaks volumes about the trust and faith that we have in our students to do the right thing. Whether intended or not, the use of surveillance technology conveys, and perhaps even betrays, an underlying lack in trust (Rooney, 2010). Trust is "at the heart of any genuine educational enterprise" (Lahno, 2001, p. 184); however, surveillance technology corrodes educational environments by working against the development of this trust (Warnick, 2007). This raises important questions about the use of surveillance in schools because, surveillance technology can disrupt the spirit of trust in schools by violating, renegotiating, and redefining pedagogical relationships (Adams, 2007).

Perhaps the biggest difference between schools and other public places, however is that schools are places that are devoted to learning and development. Teachers are not only responsible for teaching the curriculum, they are also co-responsible for the growth of children in terms of their personhood, character, and moral development. Thus the message

that surveillance technology sends to youth, who are still developing their sense of identity and personhood, must be considered differently than other public places. According to Warnick (2007), privacy is important for the healthy developmental of children because it allows children to act independently which is a prerequisite for the development of responsibility. Quoting Reiman (1984), Warnick (2007) reminds us that privacy not only promotes the concept of the 'self' and personhood, it promotes "…selves that naturally access ownership of their actions and thus responsibility for them" (p. 206). By putting autonomy in the context of developmental rights, Warnick (2007) brings to light the importance of privacy for the healthy growth and development of children. Thus the use of surveillance technology in schools not only impacts attitudes and beliefs toward surveillance, it may also compromise youth's growth and development, which will be explored in greater detail in the following sections.

The socializing role of schools, the developmental needs of children, and the pedagogical relationship between teacher and students make schools very different than other public institutions. In schools teachers are required to act in the best interest of students which necessitates a different relation between surveiller and surveilled than most other public places. Clearly, a shop owner does not have the an ethical or legal obligation to watch out for the best interest of its shoppers; teachers on the other hand have a duty of care which ethically and legally requires them to act in the best interest of the children entrusted in their care. The ways in which schools are different than other public institutions raises many questions about how teachers should watch over their students while maintaining a delicate balance of trust and respect. The question is not whether teachers should watch over their

students, but rather *how* they should watch over students while also safeguarding the best interests and developmental rights of the children in their care.

Assumption 3: Surveillance in schools is necessary to help youth make the right choices until they become old enough to make their own choices

It is a common belief that that surveillance technology is necessary in order to guide and help youth learn how to behave. This notion of helping children make decisions until they are old enough to choose for themselves is closely tied to what Feinberg (1980) calls "rights-in-trust" which:

> exercise [a child's] free choice until later when [the child] is more fully formed and capable … [they are therefore] rights that are to be saved for the child until he is an adult, but which can be violated "in advance," so to speak, before the child is even in a position to exercise them… (p. 125)

Most would agree that children need adults in their lives to make decisions for them until they are developmentally mature enough to make decisions on their own accord; however, Feinberg (1980) asserts that when making decisions on behalf of children, adults have a moral responsibility not to compromise the future possibilities of the children who are in their care. He asserts it is the child's right to have "future options kept open until [the child] is a fully formed self-determining adult capable of deciding…" (p. 126). This idea of not closing off important future life possibilities for children before they become adults is what Feinberg (1980) calls a "right to an open future". In the case of surveillance technology, it has been argued that surveillance technology may compromise a child's 'right to an open future' in many unexpected ways (Warnick, 2007).

Every time an adult makes a choice on behalf of a child this impacts the child's future to varying degrees. Ideally when choices are made on behalf of children, these choices should contribute to the child's future wellbeing, such as when we choose to vaccinate a child or enroll a child in school. Unfortunately, not all choices that adults make for children contribute positively toward their future. For example, no caring adult would consider keeping a child in physical restraints as it would obviously hinder the child's physical, mental, and social development. In this case, the child's "right to an open future" would be obstructed when the child's physical, mental, and social developmental rights are compromised by the choice imposed on the child by the adult. But what about the development of the ability to make independent choices? How might limiting choice through surveillance technology impact a child's growth and development in this regard?

It is a common belief that the more likely that infractions to rules can be detected and punished, the less inclined people will be to break the rules, which should result in people making the "right" choices. Much like the present day advocates of surveillance, Bentham claimed the panoptic architectural design would reform morals, and facilitate education. Others have called surveillance technologies "moralizing machines" (Gabriels, 2016). The problem with this line of reasoning is that when people follow rules simply because they are being watched as opposed to choosing for themselves, their actions may have a very different meaning for them (Benn, 1984). In other words, even though someone who is being watched may conform with the rules, this is not necessarily a reflection of their moral character. Consider the simple case of choosing whether or not to cheat on an exam. If a student decides not to cheat because it is wrong, clearly this student did the morally right action. However if a student chooses not to cheat only because he or she is afraid of getting caught, then that

student cannot really be given any moral recognition for that choice. Moreover, if choices are made because students know that they are being watched, can we even say that their choices are their own?

While there is certainly no denying that surveillance is effective in controlling and deterring people from doing wrong, if the purpose is to influence moral character and integrity then overt surveillance can be of little help. Intensive monitoring can be detrimental to moral development because it may result in youth who grow into adults who are primarily motivated by fear of consequences or punishment. Piaget (1932) refers to this as heteronymous morality whereby rules have their own innate authority and fear of punishment is what primarily drives the decision making process (p. 36). According to Piaget this is the first stage of moral development. The second stage is autonomous morality which requires an understanding that rules are made by people, for people. Autonomous people are able to think for themselves and let their personal moral compass be their guide. They do not follow rules blindly and are able to internalize a set of rules and understand what they mean.

When surveillance technology is imposed on youth without room for negotiation, this process of internalizing rules may be hindered (Gabriels, 2016). Most would agree that we want our children to grow into moral, creative, free thinking, and productive members of society. When children grow into heteronymous adults who cannot think for themselves, not only are these democratic ideals compromised, so is the child's right to an open future. Contrary to the popular belief that surveillance technology helps children make moral decisions, it may actually have the opposite effect and inhibit moral development.

Despite the pervasive belief that surveillance is needed to ensure people do the right thing, constant and unyielding surveillance can have a number of negative effects on youth.

One concern that has surfaced in the literature is that when children's actions are directed through surveillance, they are denied important opportunities to learn how to make choices on their own. According to Warnick (2007),

> the *development of the ability to choose* requires an environment that allows children to learn about different possibilities of life and permits them to practice increasing levels of self-governance based on their own independent reasoning. (p. 323, italics added)

The development of the ability to choose is a basic requirement for children to grow into autonomous adults who can think for themselves. When children are under constant surveillance this undermines opportunities for children to learn how to make independent choices and hinders their self-governance. Equally concerning is that they may become less likely to develop into adults that recognize their right and ability to make their own decisions and control their own fate.

Another way that intense surveillance may compromise a child's right to an open future relates to the development of selfhood and identity. "If people grow up in surveillance they will be less likely to acquire selves that think of themselves as owning themselves" (Warnick, 2007, p. 206). This impacts not only one's sense of selfhood and identity, but also self-reliance and confidence. As such, we need to question whether surveillance technologies may deprive children of the opportunity to develop self-confidence and the life skills necessary to adapt and thrive in the real world (Rooney, 2010). This raises important questions about whether directing children's choices through the use of surveillance technology may impact their ability to grow into autonomous individuals.

From a pedagogical perspective, teachers and parents are seen as co- responsible for the moral and character development of children. While it might be tempting to use surveillance technology to "help guide" youth in their decisions, this may actually be counterproductive. Admittedly, when students behave in accordance with the rules it may feel like children are making good choices and that they can be trusted to do the right thing, but if students are not truly free to choose for themselves, this is really an empty false trust. As such surveillance technology can never enhance trust or moral character, if anything it diminishes the need for trust. In the words of David Lyon (2003),

> Collateral damage is caused above all to love and to trust. The culture of control that is fostered by the commodification of surveillance currently mitigates against an ethics of care. Its automation in algorithmic systems tends to shift it further and further from the personal and the moral. (p. 93)

When surveillance technology serves as a replacement for trust based and caring relationships, it raises important questions about how new surveillance practices may reshape and transform the moral fabric of our society. As such the surveillance of children must not only be considered in terms of controlling undesirable behavior, but also in terms of children's development rights and the right to an open future. Lyon's ethic of care insists that "care, not just control, should be included in the surveillance picture" (p. 31) which is a necessary first step in this direction.

Assumption 4: School surveillance systems simply automate existing processes and practices

"Kids lose their school IDs but they don't often lose their eyeballs" (Segall, 2013). This sub-headline of a CNN news report is in reference to how iris scanners in schools are

being used to replace traditional student ID cards. When contemplating whether to adopt new practices like watching and tracking children with biometric surveillance technology, issues like efficiency and accuracy are often cited as main considerations. Advocates of iris scanners are quick to point out that the convenient hands-free screening device enables quick and accurate identification of children. When used in combination with GPS technology it enables an efficient way to track the location of children on school busses. Equally important, it can be argued that the iris scanning process is simple, effortless, and easily fits into the existing school routines. Not surprisingly, the security industry actively promotes the idea that surveillance technology can be easily adopted into everyday life, suggesting there is a "natural fit, or harmony between security technology and humans" (Casella, 2003, p. 88). The common assumption here is that technological school surveillance systems complement everyday life by simply automating existing processes.

The notion that surveillance technology in schools simply automates existing practices is based on the premise that technology operates in uniform, predictable ways. The problem with this line of reasoning is that it does not recognize the unintended consequences of introducing these tools into educational environments. Surveillance technologies not only invite a new kind of technologized style of monitoring and supervision, they may also implicate the teacher in unknowingly propagating a hidden curriculum. Hartley (1998) for example, has voiced concerns about the "hidden curriculum" that can arise from the "technological fix of panopticised pedagogy" that is introduced with the use of Internet monitoring and filtering software in schools. Most Internet monitoring and filtering companies that unintentionally block content based on objectionable keywords have procedures in place to appeal or override banned sites, but this was not always the case. In

the past companies such as CYBERsitter have been known to outright refuse to unblock politically and value laden charged content. Even though CYBERsitter eventually changed its policy to permit users to have greater control over what is blocked, it is important to revisit this case because it illustrates how surveillance technology does much more than simply automate existing practices. Teachers who use Internet filtering tools may unknowingly become complicit in propagating the hidden curriculum of software developers.

According to *Internet Filters: A Public Policy Report (2006)* before 1999 CYBERsitter (www.cybersitter.com) blocked virtually all gay and lesbian sites and various human rights organizations such as Amnesty International (www.amnesty.org), The National Organization of Women (www.now.org), and the Human Awareness Institute (www.hai.org). When the National Organization of Women (NOW) appealed the ban of their website, Brian Milburn, the CEO of Solid Oak Software (the developer of CYBERsitter) replied, "If NOW doesn't like it tough… We have not and will not bow to any pressure from any organization that disagrees with our philosophy" (Wang, 2006, p. 150). Milburn was open about the use of the software to enforce a conservative moral code: "We don't simply block pornography… (t)he majority of our customers are strong family-oriented people with traditional family values" (Heins, Cho, & Feldman, 2006, p. 23). At the time the statement was made, Family Focus, a conservative Christian organization had been selling CYBERsitter. [2] This blocking of websites that promoted equality of gays and lesbians led to accusations that Internet filtering companies were discreetly censoring this content, under the

[2] The mission of Canadian Focus on the Family is to "To strengthen Canadian families through education and support based on Christian principles". Their web page (www.focusonthefamily.ca) explicitly states that one of their guiding principles is that "Marriage is intended by God to be a thriving, lifelong relationship between a man and a woman…"

a pretense of blocking pornography (Heins et. al, 2006). This use of Internet filtering software was largely viewed as a move away from active censorship and a move toward censorship by passive omission (Gross, 2001).

In schools, censorship by passive omission is what Eisner (1985) calls the null curriculum. He contends that things which are excluded from the curriculum may be as educationally significant as the implicit curriculum. According to Eisner (1985), "ignorance is not simply a neutral void; it has important effects on the kinds of options one is able to consider, the alternatives one can examine, and the perspectives from which one can view a situation or problem" (p. 97). Given the potential influence that Internet filtering software can have on the development of attitudes and beliefs of youth, it is difficult to assert that use of these tools simply automate existing practices.

In subsequent years both legal and public pressure have resulted in web filtering companies like CYBERsitter to adjust their policies and permit users to have a greater control of the content that is filtered. However, it is important to point out that the intent of these tools has not changed. One purpose of these tools is to filter objectionable websites based on ideological and moral value systems. As such, Internet filtering software is not simply a tool that automates existing practices in schools, rather its use could have potentially significant political, societal, and moral consequences. Even if one agrees that there is a need for filtering software in schools, the question remains who decides what should be filtered? These are important considerations because both the hidden and null curriculum have a profound influence on the belief systems of the youth who will ultimately become the leaders of tomorrow. Taking into consideration the potential impact of the null

curriculum, it is difficult to suggest that filtering software is ideologically and morally neutral.

Admittedly the utility of filtering software and our ethical obligation to protect young children from the dangers on the Internet is not in question. Many would agree that simply banning Internet filtering software in schools is not an option, especially in the case of very young children. Clearly, this is not a simple matter of good verses bad, the issue is far more complex than that. "Technical development is neither good, bad, nor neutral" (Ellull, 1990, p. 37). Nor is it a simple matter of how the tool is used,

> technique carries with it its own effects quite apart from how it is used... No matter how it is used, it has of itself a number of positive and negative consequences. This is not just a matter of intention (Ellul, p. 35).

It is these unanticipated consequences that make the issue of surveillance technology in schools so contentious. Far from simply automating existing processes, surveillance technologies, which are largely premised on containment and control, may have significant implications for youth who are in the midst of developing their personal belief systems and world-views.

Assumption 5: Surveillance improves learning because it increases time on task

On the surface it might appear that by increasing student productivity and time-on-task surveillance technologies inevitably leads to better learning environments; however, this line of reasoning over simplifies the purpose of education and does not recognize that teaching and learning is multifaceted. For example, a SMART SYNCH report entitled *More Time to Learn (2008)*, claims that on average, the use of the Synchroneyes software results in a 70 % time savings for "non-value adding" administrative tasks such as walking around the

classroom for the purpose of keeping students on task. Similarly, a Faronics Insight case study concluded that the use of this software means that "teachers no longer need to walk around the lab to monitor student activity" (Anderson, 2011, p. 2). Interestingly, these reports seem to suggest that productivity and learning is somehow improved by reducing the amount time that a teacher walks around the room. What reports like this fail to recognize is that tasks such as walking around the classroom can in fact be very much "value adding". The following teacher anecdote reveals how something as simple as a teacher spending time monitoring students through a computer screen from behind a desk, rather than walking up and down the rows of a computer lab can have a profound impact upon the classroom climate.

> *When I first got classroom management software in my computer lab I absolutely loved it! It made it so easy to ensure students stayed on task. It wasn't long before I realized that as long as I was at my desk, students would not even try to go off task. At first this was great but eventually I felt chained to my desk because every time I would venture away students would see this as their opportunity to go off task. Before I had the classroom management software I regularly walked around the classroom. I enjoyed small talk with students and I am quite certain the feeling was mutual. Now there are significantly fewer opportunities for those types of conversations. I must admit it has significantly changed the climate of my classroom. Before my class was a lively welcoming place but now the sound of vivacious student voices has been replaced by the tap, tap, tap, of the keyboard keys.*

Here we see the danger of measuring educational value solely through a technical instrumental lens, which prioritizes student productivity and time on task. It was those walks

around the classroom that opened up possibilities for this teacher to meaningfully engage with her students as individuals. While the value of casual conversation has been given little attention in educational research, it is difficult to deny that these interactions are important for building a positive classroom environment. Max van Manen (2016) suggests that the pedagogical value of conversation is closely tied to the development of personal relationships between child and pedagogue. The pedagogical value of these conversations is that,

> in days and weeks to come, at the appropriate time, the teacher can exchange a meaningful look—a look that has special significance just for Mat—a prompt to reflect on how his teacher sees him, and cares for him, his being, becoming, and growth. (van Manen, 2016, p. 115)

Pedagogically sensitive teachers know that teaching is not simply about instilling the curriculum and applying instructional techniques designed to keep students focused on a particular task for a certain amount of time. In spite of what we think teachers do, "pedagogy is cemented deep in the nature of the relationship between adults and children" (van Manen, 2016, p. 33). Analyses that attempt to neatly compartmentalize the various aspects of teaching into categories of "value-added" and "non-value added" do not recognize this important dimension of teaching and completely obscure the reality of what students actually need from their teachers.

The danger of attempting to quantify the value of classroom management software solely based student productivity and time spent on task is that this propagates a fiction of sameness and glosses over other important dimensions of teaching. Classroom management software might give a teacher greater insight into a student's progress on a particular assignment, but this knowledge may come at the expense of other forms of knowledge about

students. When the monitoring of student progress is mediated with technology, the teacher's immediate attention is shifted away from students and toward the screen as illustrated through this teacher's experience using classroom management software.

> *On my computer screen I see a matrix of tiny computer screens, each containing the content of each individual students' computer screen. The first miniature screen I look at has an open spreadsheet and I can see numerical data being entered into a table. I scroll to the next screen and scan its contents. I see a formula being copied and pasted and nothing looks out of place. I move onto the third screen and scan its contents in a similar fashion. By the fourth screen watching over students has become automatic. Scroll, scan, repeat. Scroll, scan, repeat.*

This teacher is not focused on the individual children in her care, rather she is attending to a computer console and looking for "screens" that don't belong. She is not attending to freckle faced Joey who is craving attention. Nor does she notice Janice's furrowed brow or that William looks particularly tired that day. Instead of attending to living breathing student bodies, she now watches a "display" of student work on a screen. As each individual student is translated into whatever task is at hand, student bodies are nudged out of the teacher's sphere of immediate attention. Individual students are no longer distinguishable by personal traits and characteristics, but rather are seen in terms of productivity. Joey is seen as entering data and Janice is seen as copying and pasting a formula into a spreadsheet. This emphasis on student productivity dislocates the teachers' attention away from the children who are in her care. In the process, student names, faces, and bodies slip into the background and the child is purged to a mere behavioral trace.

In many ways the use of this software to keep students productive and on-task is representative of the dominance of the technical-instrumental view that currently exists in today's education system. This technical attitude is what Habermas (1984) calls instrumental rationality and is a line of reasoning that is calculated, driven by efficiency, and tends to reduce relationships to those means and ends. When teachers let their relation to students be primarily governed by a technological-instrumental orientation, pedagogic observation gives way to an observation style which serves an input-output ideology of education. Van Manen (1994) warns that the,

> [p]ersonal and moral dimensions of teaching are being threatened by the divisive consequences of what Taylor (1991) calls a runaway dominate of instrumental reason. The dominance of technical rationality makes it a challenge for educators… to hold onto non-instrumental understanding of the pedagogical nature of teaching. This has the effect of creating divisions between us and our children. (p. 150)

The primacy of instrumental reason creates divisions between educators and students by eclipsing the relational, situational, and affective dimensions of teaching which cannot always be easily quantified. The familiar saying, "children may not remember what you've taught them but they'll remember how you made them feel," is representative of how teachers are more than mere instillers of the curriculum. Even though the information that has been learned may lose relevance over time, there are countless stories of adults who feel indebted to their childhood teachers. "A great teacher's influence is sutured into our flesh so that it is now impossible to conceive of our sense of self without this influence" (van Manen, 1994, p. 144). This type of influence can only unfold in the space of personal relationships. These types of pedagogical relationships are built upon teachers' everyday interactions with

students which comprise of relational, personal, affective, and emotional based connections (van Manen, 2007). The technical mindset which emphasizes things like productivity and time on task fails to recognize these important aspects of teaching. Similarly, in the context of surveillance, David Lyon (1994) has expressed concern about how the instrumental mindset blocks out personal knowing.

The assumption that surveillance technology inevitably improves learning by increasing students' productivity fails to recognize that both teaching and learning are multifaceted. Without a doubt productivity is important, but productivity means little if it can only be accomplished in a highly controlled environment. Education is about more than control and productivity, it is about fostering active learners who can engage in creative and critical thinking. It is about instilling a sense agency and allowing youth to grow into autonomous individuals who can think for themselves. Thus, when considering surveillance technology in schools we must widen our outlook to include other important aspects of teaching and look beyond the instrumental view which emphasizes and prioritizes productivity and efficiency.

Assumption 6: If you have nothing to hide to you have nothing to fear.

If you have nothing to hide you have nothing to fear is a common sentiment than many people hold to be true. The idea that only ill-intentioned trouble-makers need to worry about surveillance, is just one of the many ways that advocates of surveillance have justified the introduction of surveillance technology in schools and other public areas. This line of reasoning suggests that only those who make infractions to the rules need to be concerned about surveillance technology in schools. What those who hold this view might fail to recognize is that surveillance effects everyone. Guilty or innocent, we become different

people when we know we are being watched. While being watched might impact some people's behaviors more than others, it would be incorrect to suggest that the effects of surveillance are completely inconsequential for those who follow the rules. Consider the experience of the familiar Pavlovian cringe that many of us get while walking through an airport security gate. It is not uncommon for one's heartbeat to elevate and temperature to rise while walking through those large imposing metal detectors. If these technologies are inconsequential, why do so many of us feel a twinge of nervousness while walking through airport metal detectors? It is almost as if our presumption of innocence is undermined by the fact that we are required to walk through that security gate at all. Additionally, why is it that guilty or not, the metal detector's silent declaration of innocence so often brings with it a huge sigh of relief? These are not the reactions you would expect from someone who is wholly unaffected by surveillance technology. Even though the effect of the security gate is arguably temporary and quite benign, this example illustrates that it is not just the ill-intentioned who are affected by surveillance technology. Innocent or not, there is no denying that surveillance technology has the potential to alter one's perception, experiences, and the choices that one makes, but the real question is what difference does this make and why should we care?

One reason for concern is that the lack of privacy that comes with constant surveillance may have a negative impact on the healthy growth and development of children. Privacy is not simply something that we exchange for security, it is something that humans universally and instinctually crave. Experience and common sense tells us that being watched severely limits our range of behavioral options. The opportunity and ability to choose is an important aspect of a child's healthy growth and development. While we may not know all

of the unforeseen consequences of stripping children of their privacy, we do know that the healthy development of youth's perception of self, trust, and authority is closely tied to privacy (Gabriels, 2016; Rooney, 2010; Warnick, 2007; Reiman, 1984; Erikson, 1950, 1963).

> In existential-phenomenological terms, privacy and secrecy are centrally constitutive of self and selfhood. Holding something private or secret emphasizes the difference between self and other, and confirms the autonomy of one's interiority and individuality. (Friesen et al., 2009, p. 88.)

Along the same lines, Warwick (2007) asserts that "surveillance is a denial of self-ownership and hence, it is an insult to personhood" (p. 325). Equally important is that privacy is a prerequisite for the development of personal responsibility because privacy promotes "selves that naturally accept ownership of their actions and thus responsibility for them" (Reiman, 1984, p. 206). When considered in this light, it becomes quite clear that privacy has significant implications for healthy growth and development of autonomy.

Privacy not only plays an important role in the development of a healthy sense of identity, it also has a role in building a culture of creativity, innovation, and risk-taking. Far from promoting a culture of creativity and innovation, when students are constantly monitored it breeds conformity, obedience, and submission. Additionally, unpredictability and non-calculability are important for creativity to flourish (Papastephanou, 2006, p. 50). Most would agree that it is impossible to get through life without taking risks yet, surveillance technology in schools are often used in an attempt to create a risk-free environment. The concern here is that schools are supposed to prepare students to live in the real world, but an entirely risk-free environment cannot do this. In fact, Warnick (2007)

contends that if schools are truly concerned with student growth they should accept that mistakes will be made and focus on helping youth learn from their missteps (p. 333).

Surveillance research in educational settings also reinforces the idea that it is problematic to dismiss surveillance technology as something that does not impact those who have "nothing to hide". A study involving ballet instructors who taught in a commercial dance studio with video surveillance cameras reveals how being watched can suppress freedom and restrict choice (Berg, 2015). The study found that the unseen audience, which was made up of parents, visitors in the waiting room, and administrative staff in the director's office, made ballet instructors feel an increased need to control student behavior. For some instructors, the unseen audience also created a hyper awareness of how they physically touched their ballet students in the class. This resulted in some instructors shifting their pedagogical approach for the purpose of pleasing the audience. For example, ballet teachers found themselves incorporating more formal ballet exercises with less creative exercises. When creative exercises where used, they were often authoritatively directed to ensure students did not appear to be "playing around". Ballet instructors would intentionally physically correct younger students knowing that the unseen audience would approve of this type of extra attention. Whereas for older ballet students, teachers would avoid physical touch and instead mostly rely on modeling steps and movements for students to mimic. This was the case even when a student might have benefited from a ballet instructor physically adjusting the ballet student's movements. In addition, teachers knowingly stood outside the camera frame when students practiced travelling steps as not to appear lazy, and some of them even skipped bathroom and snack breaks.

Even though the ballet teachers were doing nothing wrong and should have "had nothing to fear", the presence of the unseen audience still compelled them to alter their pedagogical practices. The concern here is that in many of these cases new pedagogical practices were introduced not for sound pedagogical reasons but because of the teacher's perception that the unseen audience would approve. For example one instructor commented, " I alter(ed) my pedagogy, which normally includes increased value on imagination and creative movement for children, to conform to my perception of parental expectations about formal ballet training." (p. 239). Another ballet instructor noted that the unseen audience created "pressure for the teachers, which is problematic when trying to maintain a teaching philosophy that is progressive" (p. 240). Moreover, the new approaches used by instructors tended to be more authoritarian and limited student voices which instructors felt shifted and even interrupted the pedagogical relationship they had with students. These changes noticeably altered the educational environment and represented a sharp move away from "dialogical dance education" which values students' voices. So to claim that "if you have nothing to hide, you have nothing to fear" is problematic because it implies surveillance is inconsequential for people who abide by the rules. To the contrary, surveillance effects everyone. It is not uncommon for people to make different choices when they know they are being watched. In fact, this is even the case even when there is a mere possibility of being watched. The ballet instructors had no way of knowing who their unseen audience was or whether there was actually anyone watching; yet they altered their teaching style in accordance with their perceived values of the unseen audience. So, regardless of whether one is good or ill intentioned, the knowledge that there is a possibility of being watched may have a controlling effect.

When we know we are being watched we may not make decisions as a result of our own agency, but rather based on the expectations of others. This realization was largely the driving force of the architectural design of the panopticon prison. The design of the panopticon facilitated authority and control through a highly visible central tower which enabled those in power to observe prisoners who resided in the outer periphery. According to Foucault (1979), crucial to the success of the panopticon is the uncertainty that it induces in the minds of those being watched. Much like being watched through other forms of modern surveillance technology, those being watched in the panopticon never know whether they are being observed at any given time. All they know is that someone might be watching. It is through this visibility of visibility, that Foucault (1979) asserts that modern society exercises its controlling systems of power and knowledge. In this way, being watched is also very much about the watched watching over themselves. Foucault's analysis of the panopticon is important because it is another reminder that when we are being watched our actions are no longer our own. It also points to how mass surveillance subtly creates a prison of mind which fosters compliance without physical force (Greenwald, 2014).

Even in cases where students make decisions based on their personal belief system, as opposed to because they are being watched, this does not mean that they are completely immune to the effects surveillance. Surveillance technology robs everyone equally of the opportunity to demonstrate one's moral character and to experience what it is like to be trusted. Even if one does not feel like a target of surveillance, surveillance brings with it undertones of mistrust which alters the meaning of actions that take place under surveillance. When a child is under constant surveillance we can never truly know whether the choices made by the student are a reflection of moral character or a result of fear of getting caught.

For children who are in the process of moral development this is especially troubling for many reasons. First of all, the experience of being trusted is paramount for a healthy moral development because 'trust leads to trustworthiness' (Lahno 2001, 183). The idea here is that in order to learn how to trust others, one needs to experience what it is like to be trusted (Rooney, 2010). Secondly, for heathy growth and development, children need to be given the opportunity to show that they can be trusted to complete tasks on their own. Rooney (2010) asserts that a teacher's trust can contribute to the development of a child's confidence and self-determination. For example, when

> the teacher trusts a child with a responsible task in order to reveal to the child their own capacities and potential. ….(this) does not just gain the confidence of others around them, but (the child) acquires a sense of self-confidence as well. (Rooney, 2010, p. 348)

This type of trust is pedagogically important because in placing trust in a child, this can create additional motivation for a child to do what is right (Lahno, 2001). When someone who is respected puts faith in another, the natural inclination is to not disappoint. This expression of confidence in a child is a form of pedagogical trust that is crucial for meaningful learning to take place. In contrast, when surveillance technology is increasingly relied upon to help children make the right choices it does not build character and trust, at most it produces a thin veneer of a false, empty trust.

To dismiss surveillance technology as something that does not impact those who have "nothing to hide" is problematic for many reasons. First of all, ill-intentioned or not, no one is immune to the effects of surveillance. We become different people when we are watched. Regardless of whether one is inclined to break the rules, both the seen and unseen audience

has the power to influence the choices we make. Secondly, even in cases where one's behavior may not be directly influenced by the knowledge that one is being watched, our actions have a different meaning when they are conducted under overt surveillance. As a result, this may compromise moral development and a child's perception and value of self, trust, creativity, authority, and risk taking. Lastly, to suggest that only those who have something to hide should fear surveillance implies that only the bad or ill-intentioned people seek out privacy, but this is not true. It is perfectly normal for one to expect and demand a degree of privacy in one's personal life. The message that only bad people seek out privacy to perform bad deeds is not only prejudicial it undermines democratic ideals. Moreover, when one accepts the narrative that 'if you have nothing to hide you hide nothing to fear' this is a silent agreement to render oneself harmless to the watchers or those in power (Greenwald, 2014). In a democratic society this is a very dangerous precedent to set, because the system relies on its citizens to serve as political watchdogs. Quoting Rosa Luxemberg, journalist Glenn Greenwald (2014) makes a powerful point about the controlling yet often undetectable effects of mass surveillance: "He who does not move, does not notice his chains." Just because these metaphoric chains might feel invisible to those who claim they "have nothing to hide", this does not make them any less real or less constraining.

Final thoughts: Control verses Care

Critical discourse around the use of surveillance technology to watch over youth and challenging our commonly taken-for-granted attitudes is an important first step. The next question is where do we go from here? Clearly, we cannot completely abandon existing surveillance practices. Parents and teachers are morally and legally responsible for the welfare of children. The inescapable fact is that our moral and legal obligation will always

require a degree of surveillance over children. With this in mind, some scholars have suggested placing reasonable limitations on the surveillance of youth (Warnick, 2007; Taylor, 2013; Gabriels, 2016), while others have suggested that an ethic of care is needed (Lyon, 2003, 2014). The problem is that defining the reasonable limitations of surveillance and coming to a common understanding of what a surveillance of care might look like is not an easy task.

One difficulty in attempting to identify whether certain surveillance practices are helpful/empowering or detrimental/limiting is that surveillance has two faces, which are "located on a continuum from care to control" (Lyon, 2003, p. 5). To confuse matters further, most forms of surveillance seem to afford an element of both care and control. In the case of young people the line between care and control is particularly blurry because intent does not always align with perception. One obvious example is when parents or school officials limit access to online resources to restrict potentially dangerous online activity. For the capable adolescent who feels that this breach of trust is a form of control, it does not matter that the underlying intentions have his or her best interest at heart. This suggests that understanding the care-control surveillance continuum is not just a matter of intention, other considerations such as maturity and the perceptions of the young people also come into play. In the case of youth this difficulty is compounded by the fact that there is no magic age when a child is suddenly capable of making responsible decisions on his or her own. Every child is unique and it is impossible to predict how a child will react in new challenging situations.

To illustrate the complexity of the surveillance care-control continuum, it is helpful to turn to the case of GPS ankle bracelets. Recently a Belgium hospital participated in a GPS enabled baby ankle monitor trial to help track the location of newborns. What makes the

ankle bracelet case so interesting is that when this device is used on infants to protect them from being illegally taken from the hospital, the device is primarily perceived as a symbol of care; however, when the exact same device is used on prisoners the device becomes a symbol of control and restraint (Gabriels, 2016). Cleary the context and intention of surveillance matters a great deal. In the case of an infant, it could be argued that the infant's freedom is not restricted because infants are completely dependent on caregivers for survival and security. For fully grown, capable adults the case is altogether different, the ankle bracelets is not only controlling it is coercive. But what about the use of an ankle bracelet on a physically and mentally healthy 8 year old, 12 year old, or 16 year old? The situation becomes less clear. As a child matures and becomes more capable, good intentions seem to have less weight in terms of justifying the intensive surveillance of youth. This illustrates the complexity and difficulty of considering the surveillance of youth solely in terms of intention. The situation is even less clear when we consider the case of preadolescent youth who are just in the process of learning how to think and act independently.

When considering how a surveillance technology or practice might fit into the control-care continuum, it is important to recognize that preadolescence is a unique time of growth and development. Early adolescence marks a transition period away from childhood in which youth strive for more autonomy. At this age the negotiation of and resistance to rules is considered a normal part of development. Rather than react with increased control through the use of cellphone tracking apps or other means, Gabriels (2016) asserts that youth at this age should been given a sensible amount of increased freedom. While parents may feel pressure to tighten their control of children at this age, over parenting or 'helicopter parenting' may potentially thwart adolescent's self-development (Gabriels, 2016). The same

could be true for youth who are not given enough freedom to make choices for themselves while in school.

Constant surveillance of adolescents may result in youth following the rules, but it also removes adolescents from situations where they need to think and make choices for themselves. If adolescents are never given the opportunity to make decisions and learn from their mistakes, they may become overly reliant on others to make decisions for them. Gabriel's (2016) warns against creating a situation of over-proximity, whereby caregivers mistake care for control, and instead recommends keeping a critical distance to ensure a healthy self-development and respect for autonomy, and privacy (p. 7). If we care about the growth and development of the youth in our care, it is critical that we do not act on our fears in such a way that it leads to us to mistake control for care. Admittedly it is important to keep children safe from harm, but it is also important to differentiate between a young child who may legitimately need protection and older youth who are at the stage of maturity that would benefit from opportunities to show they can be trusted and make independent decisions.

One difficulty in assessing where surveillance practices in schools fall within the surveillance control-care continuum, is that it is in the best interest of everyone for teachers to effectively manage the behavior of large groups of children. In order for a school to run smoothly a degree of control will be always necessary. At the same time, problems may arise when the management of the masses compromises or does not respect the needs and rights of individual students. Perhaps the biggest concern about mass surveillance in schools is that it views all students the same, when in reality the needs of individual students varies a great deal. So the question becomes whether technological mediated surveillance is able to detect

and respond to individual differences and needs of students in the same way that a caring pedagogically sensitive teacher can. While it may be tempting for school officials to base decisions surrounding the use of these tools around issues of efficiency, convenience, and ease of use, it is important that the developmental needs of students are considered as well because one size does not fit all.

Clearly, the student's maturity and ability to make decisions matters a great deal when considering the limitations of surveillance in schools. Yet, there seems to be little differentiation between how surveillance technology is implemented in elementary schools versus secondary schools. Once a surveillance practice is in place in one school, its implementation tends to be carried over to other schools in same manner with little consideration of how the context of each school or classroom may differ. In many cases software installation, set up, and updates are done remotely by IT personnel who never even step foot in the classroom, let alone meet the students or the teacher. The same is true for the developers of the software, which is even more concerning because software in general is developed with the "typical average person" in mind. Yet most teachers know that the concept of the average student is a complete myth. Todd Rose (2013a) reminds us that there is no such thing as the average student. In the context of students with learning differences, Rose (2013b) maintains that young people's ways of perceiving the world and reacting are much more diverse and dynamic than we might ever have imagined and that in order to make the most of education educators and parents alike must tune into children's emotional states. Indeed, it would be next to impossible for a teacher to manage a group of children without being in-tune with the emotional states of the individuals who make up that group. But can

and should teachers trust a machine to accurately read and appropriately respond to the diverse emotional and developmental needs of children in their care?

Moreover, developmentally children need to feel a degree of trust and respect from the adults in their lives, but when surveillance is mediated by a machine it becomes increasingly difficult to do this. When the surveillance or supervision of youth is mediated through technology, the teacher's message of care and concern may become overshadowed by the machine's overwhelming message of mistrust (Warnick, 2007). After all the machine's sole purpose is to prevent and catch youth from breaking the rules. The teacher on the other hand wears many hats, including that of coach, facilitator, nurse, cheerleader, and confidant. This of course does not mean that these surveillance tools or practices should be altogether abandoned but rather, teachers and school officials who use these tools may need to go to greater lengths to ensure their message of care and concern is heard by students.

It is not uncommon for well-intentioned parents and school officials to implement surveillance practices in schools with the intent to keep youth safe and to make the school run more smoothly; however, it is important to recognize that surveillance practices in schools exist along spectrum between control and care. Lyon (2001) warns that the instrumental mindset, which is largely concerned with issues of efficiency and productivity, leans more towards control but what is really needed is an ethic of care (Lyon, 2001). An ethic of care for children who are in the midst of growth and development means respecting and protecting children's right to an open future, including the recognition and preservation of children's developmental rights. This means not restricting opportunities for children to show that they can be trusted and that they have the capacity to make independent decisions. It also means accepting that children will make mistakes and that this is a normal part of

maturation. Wherever possible school officials and parents should watch over children in a caring way, while avoiding over-proximity and the implementation of surveillance practices for the primary purpose of control. The efficiency and convenience of surveillance technology may be tempting, but sometimes what is best is not always what is easiest. Just because we can surveil our children across multiple aspects of their experience, does not mean that we should.

Chapter 6: Conclusion

The purpose of this inquiry is to explore the hidden curriculum of surveillance technology and the ethical demands and responsibilities that come with it. The approach taken to achieve this goal is the postphenomenological analysis of student and teacher experiences with classroom management software, including the disclosure of the values and beliefs that are built into surveillance technology. By investigating specific experiences with classroom management software, many aspects of the nature of surveillance technology can be revealed. The postphenomenological framework of Don Idhe (1990, 2009) is particularly helpful in drawing attention to the human-(surveillance)technology-world relations that emerge when surveillance technology is used to watch over youth. Perhaps most significantly, postphenomenology is particularly valuable in teasing out the often overlooked amplification and reduction structures of surveillance technology, and thereby draws attention to what may be lost when surveillance technology is used to watch over youth.

The postphenomenological analysis of experiences with classroom management software is a critical starting point for understanding the hidden curricula of surveillance technology, because *hidden* curricula tend to operate at the level of our prereflective, embodied, perceptual selves. According to Idhe (1990) when a technology is "embodied" our experience is reshaped through and with the device. Embodiment relations are helpful for understanding how surveillance technology alters how we perceive the world by drawing attention to how technology and the objects of our world are experienced as an extension of the corporeal self. When the teacher watches students through a computer screen for example, the screen she is looking at withdraws, and what she sees on the screen becomes the world of the student that is under observation. When engaged in the embodiment relation, the

actual tools used to watch over students silently slip into the background. This is important because when tools quietly slip into the background we give very little thought as to how they may be informing how we perceive and act in the world. In addition, when teachers are engaged in such human-technology embodiment relations and watch students through various forms of technology, these tools necessarily shape and alter what they see. In fact, it could be argued that when the watching of youth is mediated through technology, what is seen is not the real world at all, but rather a hermeneutic relation.

In the case of classroom management software, teachers engage in a hermeneutic relation with surveillance technology whenever they read what is on the screen and interpret it for meaning. When a teacher sees a display of student work on a screen for example, it serves as a student's data-double, which is interpreted for meaning relative to the student. Instead of seeing the living breathing body of a child, the teacher now sees the child in terms of characters and images on a screen. As such the child is, in some respects, reduced to a thing like entity, explorable via mouse movements, keyboard strokes, and measurable via the status of a school assignment. In this way the hermeneutic relation shapes and transforms what is seen, and what is not seen. This transformation is not to be taken lightly because it is not "merely an imitation or reproduction" that comes into being but rather a new "variant world" (Ihde, 1983, p. 59). In this new world, the teacher's immediate attention is dislocated away from the living breathing student bodies that are in her care, and towards the world that exists on the computer screen. The teacher adapts to the new world that is opened up through the classroom management software by altering how she watches over her students. Rather than watching student bodies in context, she now attends to a representation of them on the screen. Thus, classroom management software disrupts how a teacher watches over her

students, pushing actual students out of the teacher's immediate attention and into a space where they are precisely visible from a distance, but are not seen in the immediacy of their embodied selves. Hermeneutic relations may inform us about the world, but they also simultaneously distance us from it. Ironically, by providing greater access to a child's virtual world, classroom management software also limits what the teacher may see of their everyday lifeworld.

Of course that is not to say that a teacher using this software never "sees" her students. Teachers who use this technology are certainly not limited to watching students through a screen, nor are they restricted to interacting with students through the use of this technology. Many teachers will recognize when a human touch and face-to-face conversation is needed, but all too often these tools act upon teachers without them realizing it. Not only does classroom management software shape and transform what is seen and not seen, the design of the software calls on teachers to watch over students in specific and predefined ways. The increased reach of such software, means that teachers are no longer required to walk around the classroom to watch over students. Even before a teacher enters the classroom, the terms of engagement for using this technology necessitates that she monitors students from the distance of her computer station. In this way the classroom management software silently but emphatically "form[s] intentionalities and inclinations within which use-patterns take dominant shape" (Ihde, 1990, pp. 140-141). Sitting at the teacher's desk versus walking around the room might not seem like such a bad thing. However with the loss of those walks around the room, also comes the loss of opportunities for teachers and students to engage in small talk, respond to emergent questions, and build positive pedagogical relations. As teachers' corrective responses become automated and interactions are reduced

to mere glances across the room, there are lost opportunities for the pedagogical relationship to flourish and grow.

Even in cases where the pedagogical relationship is not necessarily compromised, the manner in which technology has the power to shape a teacher's pedagogical choices should give us pause to consider who is controlling whom. The very fact that these tools have the potential to influence a teacher's pedagogical choices calls into question exactly how much control we really have over our tools. Humans might like to believe that they have complete control over their creations, but in reality technology has the potential to shape not only our perceptions and actions, but also how we are present to others. As such, surveillance technologies in schools do not just represent an alternate way to watch over students; these tools may also reshape teachers' activity patterns, routines, pedagogical relationships, teacher presence, and ways of being in the classroom.

Our human-technology-world embodiment and hermeneutic relations reveal subtle but significant ways that classroom management software may constrain and retrain teachers' pedagogical practices, activity patterns, and relational availability. When teachers are engaged in the hermeneutic human-technology relation, it is important for teachers to recognize that surveillance technology has a tendency to hide or gloss over the unique attributes, characteristics, and needs of the children who are in their care. The status of a school assignment is hardly a complete reflection of the student who contributed to the content on that screen. When teachers solely rely on classroom management software to watch over students it strips away a child's individuality and propagates a fiction of sameness. Yet we know that students are not all the same; they enter teachers' classrooms with unique experiences and needs. Thus, teachers who use these tools must be especially

attentive to the individual needs of children and not solely rely on the technology for assessing the educational and individual needs of the children in their care.

Paying close attention to what Ihde (1990) calls our alterity relations to technology is particularly helpful for exposing the ways in which tools like classroom management software may shape and alter how teachers manage their classrooms. A common yet powerful example of the alterity relation is the technical breakdown (Adams & Thompson, 2016, p. 63). The alterity relation is especially important because it exposes how teachers can sometimes become overly dependent upon surveillance technology to manage student behavior. When a teacher is unexpectedly thrust into a state of vulnerability, and is no longer able to control student behavior with the click of a button, a teacher's dependency on the software quickly becomes evident. The technical breakdown serves as a warning that when teachers routinely choose the seemingly easiest and foolproof method of classroom management, other methods of solving problems may be lost. This is especially true in cases where teachers solely rely on the software, and eventually fall out of practice in dealing with normal everyday problems without the software. When surveillance technology disrupts or replaces other forms of classroom management strategies, this endangers valuable and meaningful ways knowing and being in relation to others in the classroom. This of course does not mean abandoning surveillance technology tools, but rather using these tools in conjunction with other classroom management strategies to ensure teachers do not become overly dependent on technology to solve problems in the classroom.

When everyday interactions with students are increasingly outsourced to classroom management software, and problems are addressed by clicking a button instead of directly interacting with students, teacher interactivity is replaced with interpassivity. Interpassivity

stands in contrast to interactivity, and denotes the human-(surveillance)technology-world relation whereby we hand over or "download" our work to a technology to perform in our stead or absence. Interpassivity is a characteristic of Ihde's (1990) background relation (Adams & Thompson, 2016), whereby technology operates in the background quietly shaping our environment without requiring direct human interaction with the technology. When classroom management software operates in the background, teachers may believe that they no longer need to watch over their students because nothing can get past the all-seeing gaze of the software. For example, one teacher interviewed for this study asserted that classroom management software is so effective that he does not need to watch over his students at all times. He justified his inattentiveness by pointing out that, at any time, he can retrieve historical computer logs to check up on the past activities of students. The problem is, it is not just a loss of control over students that is at stake. Nor is it the status of an assignment that is of concern. While the panoptic effect of surveillance technology certainly has its benefits in terms of controlling student behavior, it is important to recognize the supervisory role of the teacher is not just about exercising control over students. Supervision is also an on-going relation of care and responsibility. When a teacher outsources the responsibility of watching over children to a machine, important aspects of teaching may become overshadowed and even silenced. Teachers are not merely police officers, they are also caregivers, sources of encouragement, and confidants who may play a key role in the development of a child's development, self-esteem, and identity. Teachers do not just teach, they inspire; but when the task of monitoring students is outsourced to a machine many of these important aspects of teaching may be lost.

The ways in which surveillance technology enables interpassive over interactive

relations also has implications for parent-child relationships as well. When parents continuously monitor their children through electronic devices parents may feel that they "no longer need to be present or available to discuss with their children where they are, what they are doing and with whom… so long as they are tracking them" (Taylor & Rooney, 2017, p. 7). When surveillance devices become a substitute for presence and the availability of the parent, these devices may compromise personal connections that parents may otherwise development and maintain with their children. These tools may also upset the balance of the adult-child relationships because with these new methods of watching over youth also comes messages of mistrust and control. As Lyon (1994) points out, the all-seeing gaze "has everything to do with power and nothing to do with love" (p. 208). The fact that this software is needed and used at all, speaks volumes about the trust and faith that we have in youth to do the right thing. Whether intended or not, the use of surveillance technology conveys, and perhaps even betrays, an underlying lack in trust (Rooney, 2010). Trust is "at the heart of any genuine educational enterprise" (Lahno, 2001, p. 184); however, surveillance technology corrodes educational environments by working against the development of this trust (Warnick, 2007). This raises important questions about the use of surveillance in schools because surveillance technology can disrupt the spirit of trust in schools by violating, renegotiating, and redefining pedagogical relationships (Adams, 2007).

The hidden curriculum of surveillance technology not only calls on teachers and parents to watch over youth in a prescribed way, it also encompasses the values and beliefs that are built into the design of these tools. Surveillance technology springs from an instrumental mindset, which prioritizes the values of efficiency and productivity, and thus reduces human relationships to those ends. When teachers give way to a technical-

instrumental orientation, this can often lead to an input-output ideology of education, and overshadow the importance of the relational and situational dimensions of teaching. Every time a teacher chooses to solve a problem by reaching for a mouse or sending an electronic message as opposed to interacting directly with a student, there may be a lost opportunity to build or strengthen the pedagogical relationship, and a diminishment of the value of personal connection. In addition when the value of efficiency is over prioritized, surveillance technology is introduced into schools for convenience sake, economic reasons or political expediency, rather than based on sound pedagogical grounds. For example the introduction of iris scanners so that students no longer need to carry ID cards, seems contradictory to the goal of teaching students about individual responsibility. In Texas, RFID cards were introduced to secure government funding which was tied to student attendance. In the UK the recent widespread adoption of Classroom Management Systems or "anti-radicalisation software" (p. 8) has been reported to be in response to England's *Counter-terrorism and Security Act* (Taylor & Rooney, 2016).

The hidden curriculum of surveillance technology and the values and beliefs that are built into the design of the software also have implications for a child's growth and development. The intensive use of surveillance technology can disrupt the spirit of the educational environment by compromising a child's sense of trust, privacy, risk taking, and freedom of choice. The development of the ability to choose is a basic requirement for children to grow into autonomous adults who can think for themselves; however, when children are under constant surveillance this undermines opportunities for children to learn how to make independent choices. In addition when children's every movement is watched this may compromise moral development because a child's actions have a very different

meaning when they are conducted under constant overt surveillance. We can never know whether a child is making a choice simply out of fear of getting caught or as a result of freely choosing to make the right choice. In this way intense surveillance robs children of the opportunity to show they can indeed be trusted to do the right thing even when no one is watching. This may have has serious implications for the development of child's perception of self, trust, creativity, authority, and risk taking. When viewed in this light, the hidden curricula of surveillance technology has implications that reach far beyond the four walls of the classroom.

The danger of the instrumental mindset is that it feeds the belief that technological development inevitably represents progress and improvement to the human condition, even when something very different is called for. The inherent values of the instrumental mindset are displacing a moral orientation by prioritizing the values of control, efficiency, and conformity over other important values such as care, trust, autonomy, and critical thinking. As David Lyon (2003) reminds us, all forms of surveillance have two faces which are situated along a continuum of control and care, but what is really needed is an ethic of care. An ethic of care however goes beyond the development of policies that address privacy rights, data protection, and other related civil liberties. While the development of policy and procedures is certainly important, what is most needed is serious reflection on our ethical priorities. We need to consider what kind of leaders of tomorrow we want our children to become. Admittedly productivity is important, but productivity means little if it can only be accomplished in in a highly controlled environment. Education is about more than control and productivity, it is about fostering active learners who can engage in creative and critical thinking. It is about instilling a sense of agency and allowing youth to grow into autonomous

individuals who can think for themselves. An ethic of care requires opportunities for children to show that they can be trusted and that they have the capacity to make independent decisions. It means accepting that children will make mistakes and that this is a normal part of maturation. It also means that wherever possible school officials and parents should watch over children in a caring way, while avoiding over-proximity and mistaking care for control. Indeed, the efficiency and convenience of surveillance technology may be tempting, but sometimes what is best is not always the easiest path.

Moving forward what is needed is an orientation which focuses on a surveillance of care. The surveillance of children is never solely about controlling and exerting power over youth, yet the literature seems to overwhelming disregard surveillance practices that lean toward the caring side of the control-care surveillance continuum. There is little discussion in the literature about the caring side of surveillance. We rarely hear about how video cameras may keep gangsters and drug dealers off of school property, how student records can be used to identify at risk students, or how the electronic monitoring of online courses could help identify areas that students may require extra help in. Other extensions of the surveillance of care motif may include the recognition and exploration of the benefits of caring surveillance. For example, hot lunch programs and tuition assistance for those in need, are only made possible when economic resources can be tracked and monitored (Warnick, 2007). In the context of education the benefits of surveillance technology have primarily focused on issues concerning safety, security, productivity, and efficiency; however, it is time to also consider the caring side of surveillance.

To summarize, by paying close attention to human-(surveillance)technology-world relations and the amplification/reduction structures that come with it, this inquiry provides a

new set of tools to assess whether surveillance technology truly lives up to its promise of improving the educational environment. Entering the difficult theoretical space which joins multiple perspectives and theoretical discourses, makes it possible to bring buried assumptions to the forefront so they can be questioned and challenged. This includes challenging the common assumption that as developers and users of technology human beings are always in complete control. As Adams (2006) reminds us, "all objects invite us to extend or change our relationship to our world. These enhancements or transformations can be minor to profound, but the full spectrum of effects is often unanticipated and unseen until the object is integrated transparently into our lives" (p. 390). It is difficult to know how the dizzying array of new surveillance technologies used to watch over youth will alter our perceptions while also shaping new practices and routines. We may very well be on the cusp of a revolution that will usher in profoundly new ways of engaging with our world, yet very little is known about the unintended consequences of these new technical surveillance practices. We cannot afford to wait until these technologies are fully integrated into our lives to question these effects, because once we become habituated to a tool the opportunity for critical discussion quickly dissipates. The future is coming and we must be ready.

The Future Surveillance Classroom

> Imagine the classroom of the future. Every student wears various monitors sending by wireless to a central database, information about brain waves, eye movements and pulse rates. The student working at home on an online educational program is feeding the information to the teacher — or to the replacement for a teacher — an electronic monitor that has a dash-board showing attention and emotional engagement. That

> data collected from students is mined to determine effective pedagogical practices. (Kuehn, 2008, p. 86)

Kuehn's (2008) account of the future surveillance school might not bear much resemblance to the current state of surveillance in education today, but the technology required to head in that direction is already in existence. Biometric surveillance technologies that serve the same purpose as those described in the example above have already been developed. Galvanic skin response (GSR) bracelets such as the Affectiva Q Sensor and Empatica's e4 wristbands are readily available online and are currently being used to measure things like attention, engagement, anxiety, and stress by analyzing physiological and electrodermal activity. In fact these devices have already been tested in schools with the intent to, "measure student engagement physiologically… (and) determine the feasibility and utility of using such devices more broadly to help students and teachers" (Stauss, 2012).

In addition, Kuehn's (2008) account of the future surveillance school alludes to the dataveillance of student biometric information. In the surveillance school of the future, a student's biometric information is not sitting in a huge database waiting to be retrieved; rather the student's personal biometric data is analyzed and acted upon by intelligent algorithms. This vision of surveillance technology represents a new era of Intelligent Surveillance. Haggerty and Ericson (2000) foreshadow this possible surveillance future by recognizing that surveillance "is driven by the desire to bring systems together, to combine practices and technologies and integrate them into a larger whole" (p. 610). Kuehn's surveillance classroom of the future is no longer simply about gathering and storing student data; this future involves bridging surveillance technology and Artificial Intelligence (AI). This technology convergence not only collects biometric data about students, it uses artificial

intelligence or "smart" technology to actively learn about and adapt to the students' levels of engagement. While it might seem like this possibility is far off in the future, many have argued that we are already living in an era of data surveillance whereby intelligent algorithms can analyze and predict patterns which have led to new sorting mechanisms and actionable profiles (van Brakel & De Hert, 2011; Gandy 2012; Lyon 2014). Admittedly, much surveillance technology in schools today seem to be very much in the realm of Surveillance 1.0, whereby most surveillance systems work separately and independently primarily for the purpose of gathering data; yet it is difficult to deny that we may be on the cusp of entering a new era of surveillance in schools. The means to analyze, respond to, and interact with the massive human inventories is well within our grasp. It seems probably that we are moving towards a kind of active surveillance, which responds in real time to student's biometric data. This possible future raises important questions about the role of schools and teachers in society. In what ways does the shaping of the hearts and minds of young people require a human touch? Can and should an algorithm generated by a computer be trusted to correctly predict the educational needs of students?

Not only are wearable dataveillance technologies like galvanic skin response (GSR) Bracelets readily available for use in schools, these tools are continually evolving. According to Keenan (2016), we are approaching a revolution that will usher in the collection of new forms of biometrics including biological (heart rhythm, brainwaves), chemical (DNA, body odor), and behavioral (gestures, gait analysis). Kennan (2016) also predicts increased use of "body modification" technologies such as magnetic ink tattoos and the password pill from Proteus Digital Health (p. 3). It is difficult to say how these tools might be adapted for use in schools in the future, but one can get a glimpse into the vision of

the developers of these tools by visiting their websites. The Affectiva website, which sells mood detecting bracelets alludes to one such possible future. In large text that takes up more than half of the web page, visitors to the website are asked two simple but very powerful questions: "What if technology could adapt to human emotion? Emotion AI what would you build?" These questions and the potential answers to those questions point to a future that could radically alter the reach of surveillance technology as we know it. Imagine a world where your innermost feelings and emotions were not your own. A world where teachers no longer need to ask a child, "how are you doing?", because the answer to this question could be read on a screen. Not only do we need to deal with issues related to privacy and basic human rights, we also need to grapple with how this might impact the development of children who are in the midst of identity formation, stabilizing habits of thinking and doing, and socialization. The ethical implications of living in this new world are beyond the grasp of philosophers. This places a near impossible burden on parent and teachers in making ethically and pedagogical sound choices for children in their care.

It is not always easy to ascertain where certain surveillance practices fall on the surveillance continuum of care and control. Even when parents watch over children with caring intentions, youth often perceive many forms of surveillance as controlling. In addition, as these tools enable parents to watch over youth at unprecedented levels it becomes difficult for parents *not* to watch, especially since the narrative is that responsible parents always keep a close eye on their children. Indeed, there seems to be a shift in the values that define what it means to be a good parent (Gabriels, 2016). Parents are increasingly finding that ''there is significant pressure for them to engage in acts of surveillance to be 'good' parents'' (Boyd, 2014, p. 72). This pressure comes not only from

the media but also schools and teachers who request that parents use these tools to watch over their children at school. For example, ClassDojo is a tool that is used by 3 million teachers and 35 million children globally (Williamson, 2017a). The app is actively used in 180 countries worldwide with 90% of K-8 schools in the United States actively using ClassDojo (ClassDojo, 2017). When the use of tools like ClassDojo are this widespread it becomes difficult for parents to refuse to adopt these tool because they would not want to be labeled as uninvolved by teachers, other parents, and school officials.

On the surface a tool like ClassDojo might seem like a harmless mobile application that offers parents and teachers an alternative way to communicate, but these tools do much more than simply open communication channels. ClassDojo enables parents to use mobile devices to peer into the classroom through photos, videos, and messages throughout the school day. In addition, ClassDojo includes a point based disciplinary system which is essentially a digital extension of behavior charts. When a child does something “bad” the teacher takes away a point from the student's avatar (a personalized cartoon monster). Depending on their behavior students gain and lose points throughout the day, with the results often publicly displayed for other children and parents to see. These tools have been criticized because they may serve as form of public shaming which may negatively impact both how children perceive themselves and how other children view them (Vittrup, 2015).

While advocates of tools like ClassDojo might embrace the controlling nature of these tools because it keeps children on-task, others have raised concerns that these types of tools bring parents too close which may have a negative impact on the development of autonomy (Clark, 2013; Gabriels, 2016; Schiffrin et al. 2014). Clark (2013) for example has investigated how digital and mobile media are creating new challenges by enabling

helicopter parenting. Not surprisingly, most of the parents in Clark's study did not want to hover, but the temptation was too difficult to resist. Indeed it can difficult *not* to watch when given the opportunity and means. One of the founders of ClassDojo for example has reported that he is aware of "one parent who would just leave the phone open at work, next to their monitor, so they could watch pictures scroll in" (Famurewa, para. 7). The danger here is that these tools facilitate helicopter parenting, which has been ''related to higher levels of depression and decreased satisfaction with life'' for college students whose parents exercised a high degree of intensive monitoring (Schiffrin et al., 2014, p. 554). This increased depression has been explained by researchers as possibly the result of limited autonomy and competence (Schiffrin et al. 2014, p. 555). Importantly, not only do these devices strengthen and increase the intensity of harmful, pre-existing helicopter parenting styles, these tools call on all parents to watch over their children more intensely. Regardless of intent and the intensity of watching, the controlling effect of electronic watching nonetheless has a hovering effect on youth (Clark, 2013; Gabriels, 2016).

This inquiry is of utmost importance because now is the time for serious discourse about our vision for surveillance technology in schools. Surveillance technology is not like other educational technologies that have made their ways into the classroom, because it is not immediately implicated in learning. When the dynamic of the school is reconfigured through surveillance technology, this has important ramifications for both education and all of society (Taylor, 2012). In addition, surveillance technologies such as classroom management software and Internet filtering software not only invite a new kind of technologized style of monitoring and supervision, they also implicate the teacher in unknowingly propagating a hidden curriculum. This hidden curriculum has broad implications that reach far beyond the

four walls of the classroom. Moreover, these unintended consequences may often go unnoticed and it is not until later that their possible long-term effects become known.

The development and adoption of surveillance technology is not going to stop any time soon. As educators, parents, and researchers, it our responsibility to critically examine whether surveillance technology is living up to its promise of improving the educational environment. In our evaluation of surveillance technology, we must also bear in mind the latent unintended effects of surveillance technology. The possible uses and latent effects of surveillance technology are seldom predictable, nor immediately obvious. These tools may have serious implications for the shape and significance of tomorrow's learning environments, because once technology is introduced it can have ever lasting, and often irreversible effects.

So the question is, where do we go from here? As we trod down the path of critical discourse surrounding the use of surveillance technology in schools, it is important to avoid a strictly dystopian vision of surveillance technology. A purely luddite-style critique is not helpful, since it does not take into account the positive benefits of the technology. Indeed, the utility of these tools is obvious. There is a need and responsibility for teachers and parents to monitor the activities of youth both at school and in their personal lives. Surveillance technologies, like course management systems can provide new information about student activities that would otherwise go unnoticed. Big data and learning analytics are poised to provide new insight into how students learn, and when combined with artificial intelligence software, students' learning may be supported in unexpectedly tailored ways. Think, for example, of how Amazon predicts your shopping patterns and interests.

Yet there remain many questions concerning the use of surveillance technology to watch over our youth. As we march forward, a concernful awareness of technology's non-neutral law of amplification-reduction coupled with an open stance towards questions of surveillance may provide much needed direction. Awareness of our co-constituting relationship surveillance technology and the values which are built into its design is an important first step. A next step is deep reflection upon the values that should drive the use of surveillance technology in schools. In this regard, the ability to see past the instrumental mindset is critical because the instrumental mindset feeds the taken-for-granted attitude that glosses over our unexamined values, beliefs and assumptions regarding the nature of technology. Moreover, the instrumental mindset dislocates attention away from the child. We must reconsider our ethical priorities and ensure that it is the care of the child that is at the center of surveillance practices. More to the point, it is time to develop and focus on a surveillance of care and a return to the child. After all children are our greatest resource.

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Appendix

Teacher Recruitment materials for listserve and electronic distribution

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Phone: 780 XXX-XXXX

Title of Study: Teacher Experiences With Classroom Management Software: The Pedagogical Implications of Monitoring Students Electronically

Who is eligible? Anyone who has taught with classroom management software for more than 3 months is eligible. You might recognize a classroom management software programs as one of the following software programs: Insight, SynchronEyes, SMART Sync., NetOP or another name. This software lets teachers who are teaching in a computer lab environment see thumbnails of every student's computer screen and enables the teacher to take control of the student computer.

Why is this research important? This is an important study because thus far the companies that sell the software have conducted all the research in this area. This research has emphasized teacher and student productivity but has not addressed things like how classroom dynamics change when this software is thrown into the mix. Participation in this research project will help increase the body of knowledge in this area, which is currently lacking.

What is in it for you? Potential immediate benefits for school teachers might be increased self awareness and insight into how classroom management software shapes their own teaching practices. Students may also benefit if a teacher's self awareness leads to a shift in teaching practices that improve the learning experience for students.

What is required? Participants will have the option of participating in a 1-hour interview or writing about their experiences with Classroom Management Software.

When? Interviews will take place between February 4 and May 31, completely at your convenience. The researcher will work around participant schedules.

Can you change your mind once you begin? Absolutely! Immediately, after the interview research participants will review what was said during the interview with the researcher. If the research participant doesn't like something that was said it could be revised it at that time. Participants do not need to answer every question in the interview and can even stop

the interview at with no penalty. Participants will have up to one month after the conclusion of the interview to withdraw completely from the study.

How the information collected will be used: The information collected will be used for a dissertation and may eventually be printed in an academic journal, magazine, book, and/or used for presentations.

Disclaimer: Absolutely everything said will be kept in confidence and no one except the researcher will have access to personal information. Participants' identity as well as any person or school mentioned in the interview will be kept anonymous at all stages of this research project.

If you are interested in participating contact:
Tracy Boger by email tracy.boger@ualberta.ca, or phone 780 XXX-XXXX.

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by Research Ethics Board 1 at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615

Invitation Letter for Teacher Participants

Dear [teacher name],

My name is Tracy Boger. I am a former teacher and a PhD candidate at the University of Alberta. I am writing to ask you to participate in my research study entitled "Teacher Experiences With Classroom Management Software: The Pedagogical Implications of Monitoring Students Electronically". You might know this software as Insight, SychronEyes, SMART Sync, NetOp, or another name. This is an important study because thus far the companies that sell the software have conducted the only research in this area. I am interested in this area of research because the dynamics the classroom changes when teachers have control over student computers and can see absolutely everything a student does on his/her computer.

Participation in this study is entirely voluntary. For this study I will conduct interviews and/or collect written accounts from approximately 10 teachers. The information I collect will be used in my dissertation and may eventually be printed in an academic journal, magazine, or used for presentations. Participation in this research project may help increase the body of knowledge in this area, which is currently lacking. Potential immediate benefits for school teachers might be increased self awareness and insight into how classroom management software shapes their own teaching practices. Students may also benefit if a teacher's self awareness leads to a shift in teaching practices that improve the learning experience for students.

The interviews are tentatively scheduled to take place from February to July 2013. Participants will take part in a 60-minute interview at a time that is convenient to you. Don't worry if you think you don't have much to say on this subject, everything you have to offer will be of great value to me. During the interview, I will take notes on my laptop computer. At the end of the interview we will review the notes together and if you don't like something you said you could revise it at that time. Interviews will be digitally recorded and transcribed. If something is unclear when I review the interview transcripts I might contact you for clarification.

Written accounts of experiences with classroom management software can be as long or short as you wish. To assist you in the writing process a few questions will be provided as a guideline to help you reflect upon your experiences, but you do not need to use them. If you would like your writing or interview transcript sent to you please let me know prior to the interview or when you submit your writing piece, and I will mail or e-mail it to you.

I do not foresee any harm resulting from this activity. There is of course the risk that you may feel uncomfortable talking about other people without them being present. To alleviate any stress this may cause, you will be asked not to use real names when discussing a third party. In addition, your identity will be kept strictly confidential at all stages. Regardless, if at any time you feel uncomfortable you can skip a question or stop the interview altogether, without penalty or negative consequences. You would also have the right to withdraw any, or all data collected within 1 month of the conclusion of the interview. In addition, I will comply with University of Alberta Standards for the Protection of Human Research Participants: http://www.uofaweb.ualberta.ca/gfcpolic ... page=37738

If you would like a copy of the completed study you may contact me via email at the address provided. I will keep digital files on an encrypted computer and the notes, tape, written material and transcripts locked in a secure place for a minimum of five years following completion of this research activity. After five years all the electronic files will be deleted and hard copies shredded.

If you have questions about the interview please feel free to contact me at 780 XXX-XXXX, tracy.boger@ualberta.ca, or my research advisor, Dr. Catherine Adams at (780) 492-3674, caadams@ualberta.ca. Alternatively you may contact us by mail: 347 Education South, University of Alberta, Edmonton, Alberta, Canada T6G 2G5.

Your time and input is truly appreciated!

Please complete the attached consent form to indicate your decision. If you are willing to participate, please return the consent form to me. Thank you for considering this request.

Yours sincerely,
Tracy Boger

B.Ed., M. Ed, PhD.c.
Secondary Education
University of Alberta
Email: tracy.boger@ualberta.ca
Phone: 780 XXX-XXXX or 780 XXX-XXXX
The plan for this study has been reviewed for its adherence to ethical guidelines and approved by Research Ethics Board 1 at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615

Informed Consent Form for Teachers

Project Title: Teacher Experiences With Classroom Management Software: The Pedagogical Implications of Monitoring Students Electronically

Background

I am inviting you to participate in this study because you are a teacher who has taught with classroom management software. This software lets teachers who are teaching in a computer lab environment see thumbnails of every student's computer screen and enables the teacher to take control of the student computer. Your participation is completely voluntary and there is absolutely no penalty for declining this invitation.

Purpose

The purpose of this study is to explore how classroom dynamics may change when a teacher monitors and supervises students electronically. This study is part of my dissertation and may eventually be printed in an academic publication such as a journal.

Procedures

You will have the option of participating in a one-hour interview or creating a written account of your experiences with classroom management software. Regardless of which option you choose, I will comply with University of Alberta Standards for the Protection of Human Research Participants: http://www.uofaweb.ualberta.ca/gfcpolic ... page=37738

The interviews are tentatively scheduled to take place between February and July 2013, at a time that is convenient to you. During the interview, I will take notes on my laptop computer. At the end of the interview we will review the notes together and if you don't like something you said, you could revise it at that time. Interviews will be digitally recorded and transcribed. If something is unclear when I review the interview transcripts I might contact you for clarification.

Written accounts of experiences with classroom management software can be as long or short as you wish. To assist you in the writing process a few questions will be provided as a guideline to help you reflect upon your experiences, but you do not need to use them.

If you would like your writing or interview transcript sent to you, please let me know prior to the interview or when you submit your writing piece and I will mail or e-mail it to you.

Benefits

This is an important study because thus far the companies that make and sell the software have conducted all the research in this area. This research has emphasized teacher and student productivity but has not addressed things like how classroom dynamics change when this software is thrown into the mix. Participation in this research project will help increase the body of knowledge in this area, which is currently lacking.

Potential immediate benefits for school teachers might be increased self awareness and insight into how classroom management software shapes their own teaching practices. Students may also benefit if a teacher's self awareness leads to a shift in teaching practices that improve the learning experience for students.

Risk

I do not foresee any harm resulting from this activity. There is of course the risk that you may feel uncomfortable talking about other people without them being present. To alleviate any stress this may cause, you will be asked not to use real names when discussing a third party, school, or school board.

Voluntary Participation

Participation in this study is entirely voluntary. Even if you agree to be in the study you can change your mind. If at anytime you feel uncomfortable, you can skip an interview question or stop the interview, without penalty or negative consequences. You would also have the right to withdraw from the study within 1 month of the conclusion of the interview. If you withdraw, you may request that any data that has already been collected from you is deleted and not used in the study.

Confidentiality

The information collected for this study will be used for my dissertation and may eventually be printed in another book, academic journal, magazine, or used for presentations. You will not be identifiable in any resulting publication or presentation and all information I collect from you will be handled in compliance with the University of Alberta Standards. Everything you say or write will be kept confidential, and only my research advisor and I will have access to the data. I will keep digital files on an encrypted computer and the notes, written material and transcripts locked in a secure place for a minimum of five years following completion of this research activity. After five years all the electronic files will be deleted and hard copies shredded.

Further Information

If you have any questions about this study, please feel free to contact me at 780 XXX-XXXX, tracy.boger@ualberta.ca or contact my advisor, Dr. Catherine Adams at (780) 492-3674, caadams@ualberta.ca. You may also contact us by mail at 347 Education South, University of Alberta, Edmonton, Alberta, Canada T6G 2G5.

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by Research Ethics Board 1 at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615

Consent Form

Project Title: Teacher Experiences With Classroom Management Software: The Pedagogical Implications of Monitoring Students Electronically

Principal Investigator:
Tracy Boger
B.Ed. M.Ed., PhD.c.
Secondary Education, Faculty of Education
University of Alberta

tracy.boger@ualberta.ca
780 XXX-XXXX

Do you understand that you have been asked to be in a research study?
Yes
No

Have you read and received a copy of the attached Information Sheet
Yes
No

Do you understand the benefits and risks involved in taking part in this research study?
Yes
No

Have you had an opportunity to ask questions and discuss this study?
Yes
No

Do you understand that you are free to refuse to participate, or to withdraw from the study at any time, without consequence, and that your information will be withdrawn at your request?
Yes
No

Has the issue of confidentiality been explained to you? Do you understand who will have access to your information?
Yes
No

Do you understand that if you are interviewed everything you say will be audio recorded unless you explicitly request not to be recorded?
Yes
No

This study was explained to me by: _____

I have read and understood the attached information letter and agree to take part in this study:

Signature of Research Participant _____

Date _____

Printed Name: _____

I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.

Signature of Investigator _____

Date _____

Sample Teacher Interview Questions and Written Response Prompts

All interview questions will focus on the participants' experiences either supervising or being supervised with classroom management software. Due to the nature of a conversational interview questions may not be asked verbatim and all questions may not be asked if we run out of time.

Introduction

At the beginning of to the interview I will inform teachers that I am looking for anecdotes or personal stories that exemplify their experiences supervising students with Classroom Management Software. Teachers will then be invited to share any experiences that come to mind at that time. If nothing comes to mind the following questions will be used to prompt teachers.

Can you describe the first time you used classroom management software?

Can you tell me about a time when you liked using classroom management software? Why?

Can you tell me about a time when you disliked using classroom management software? Why?

Do you have any examples of when you used CMS for any or all of the following: teaching, discipline, monitoring, communicating?

Using specific examples can you tell me about how your teaching (or the way you monitor students) has changed with the introduction of classroom management software?

Can you share an experience that exemplifies how monitoring a student electronically is different than monitoring the students in traditional ways (walking up and down the rows, listening, watching etc.)?

Can you give me examples of how you used your time prior to and after the introduction of classroom management software?

Using specific examples can you comment on whether you think students like classroom management software?

Using specific examples can you comment on whether you think parents approve of classroom management software?

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by Research Ethics Board 1 at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615.

Student Recruitment materials for listserve and webpage distribution

Researcher: Tracy Boger
Email: tracy.boger@ualberta.ca
Phone: 780 XXX-XXXX

Title of Study: Student Experiences With Classroom Management Software: The Pedagogical Implications of Being Monitored Electronically

Eligibility
Anyone who has had experience with classroom management software is eligible. You might recognize classroom management software programs as: Insight, SynchronEyes, SMART Sync., NetOP or another name. This software lets teachers who are teaching in a computer lab environment see thumbnails of every student's computer screen and enables the teacher to take control of the student computer.

Why this Research is Important
This is an important study because thus far the companies that sell the software have conducted all the research in this area. Participation in this research project may help increase the body of knowledge in this area, which is currently lacking.

What is in it for you?
As with all types of volunteer work, employers certainly pay more attention to candidates who contribute to the community, are well rounded, and exhibit an interest in professional development. This is particularly true when the volunteer work is not a course requirement because it shows initiative. Furthermore, for anyone who might be interested in conducting research in the future this is an excellent opportunity to experience firsthand what it is like to participate in research.

Gift Certificate for Participation
As a small token of appreciation for volunteering your time you will receive a $10 gift certificate to either **Starbucks or Tim Horton's**. This incentive will be provided at the beginning of the interview. If for whatever reason, you do not complete the interview you will not be asked to return the gift certificate, it is yours to keep.

What is required? Participants will have the option of participating in a 1-hour interview or writing about their experiences with Classroom Management Software.

When? Interviews will take place between March 15 and September 31, 2013 completely at your convenience. The researcher will work around participant schedules.

Confidentiality: Absolutely everything said will be kept in confidence and no one except the researcher will have access to personal information. Participants' identity as well as any person or school mentioned in the interview will be kept anonymous at all stages.

If you are interested in participating contact:
Tracy Boger by email tracy.boger@ualberta.ca, or phone 780 XXX-XXXX.

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by Research Ethics Board 1 at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615

(Revised Jan 26, 2013)

Informed Consent for Student Participants

Project Title: Student Experiences With Classroom Management Software: The Pedagogical Implications of Being Monitored Electronically

Background

I am inviting you to participate in this study because you have experienced classroom management software as a student in secondary school. This software is what let your teacher see your computer screen from his/her desk and enabled him/her to take control of your computer. Your participation is completely voluntary and there is absolutely no penalty for declining this invitation.

Purpose

The purpose of this study is to explore how classroom dynamics may change when a teacher monitors and supervises students electronically. A possible outcome might be the future development of a best practices guide.

Procedures

You will have the option of participating in a one-hour interview or creating a written account of your experiences with classroom management software. Regardless of which option you choose, I will comply with University of Alberta Standards for the Protection of Human Research Participants: http://www.uofaweb.ualberta.ca/gfcpolic ... page=37738

The interviews are tentatively scheduled to take place during the winter 2013 and spring 2013 terms, at a time that is convenient to you. During the interview, I will take notes on my laptop computer. At the end of the interview we will review the notes together and if you don't like something you said, you could revise it at that time. Interviews will be digitally recorded and transcribed. If something is unclear when I review the interview transcripts I might contact you for clarification.

Written accounts of experiences with classroom management software can be as long or short as you wish. To assist you in the writing process a few questions will be provided as a guideline to help you reflect upon your experiences, but you do not need to use them.

If you would like your writing or interview transcript sent to you please let me know prior to the interview or when you submit your writing piece, and I will mail or e-mail it to you.

Benefits

This is an important study because thus far the companies that sell the software have conducted all the research in this area. This research has emphasized teacher and student productivity but has not addressed things like how classroom dynamics change when this

software is thrown into the mix. Participation in this research project may help increase the body of knowledge in this area, which is currently lacking.

This study could be directly relevant to you. Considering the computer-to-student ratio in schools is continually increasing, there is very good chance you will be expected to use classroom management software as a future teacher. This means the outcome of this study would be directly relevant to you. Potential benefits for future secondary school teachers are that this research might result in recommendations for the improvement of teaching with this software. Future students may also benefit if the recommendations improve the learning environment for students.

Risk

I do not foresee any harm resulting from this activity. There is of course the risk that you may feel uncomfortable talking about other people without them being present. To alleviate any stress this may cause, you will be asked not to use real names when discussing a third party, school, or school board.

Voluntary Participation

Participation in this study is entirely voluntary. Even if you agree to be in the study you can change your mind. If at anytime you feel uncomfortable you can skip an interview question or stop the interview altogether, without penalty or negative consequences. You would also have the right to withdraw from the study within 1 month of the conclusion of the interview. If you withdraw, you may request that any data that has already been collected from you is deleted and not used in the study.

Confidentiality

The information collected for this study will be used for my dissertation and may eventually be printed in another book, academic journal, magazine, or used for presentations. You will not be identifiable in any resulting publication or presentation and all information I collect from you will be handled in compliance with the University of Alberta Standards. Everything you say or write will be kept confidential, and only my research advisor and I will have access to the data. I will keep digital files on an encrypted computer and the notes, written material and transcripts locked in a secure place for a minimum of five years following completion of this research activity. After five years all the electronic files will be deleted and hard copies shredded.

Incentives

As a small token of appreciation for volunteering your time you will receive a $10 gift certificate to either Starbucks or Tim Horton's. This incentive will be provided at the beginning of the interview. If for whatever reason, you do not complete the entire interview you will not be asked to return the gift certificate, it is yours to keep.

Further Information

If you have any questions about this study, please feel free to contact me at 780 XXX-XXXX, tracy.boger@ualberta.ca or contact my advisor, Dr. Catherine Adams at (780) 492-3674, caadams@ualberta.ca. You may also contact us by mail at 347 Education South, University of Alberta, Edmonton, Alberta, Canada T6G 2G5. If you have any questions or concerns about your rights as a participant, or how this study is conducted, you may contact the Research Ethics Office at 780-492-2615. This office has no affiliation with the study investigators.

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by Research Ethics Board 1 at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615.

Consent Form

Project Title: Student Experiences With Classroom Management Software: The Pedagogical Implications of Being Monitored Electronically

Principal Investigator:
Tracy Boger, B.Ed. M.Ed., PhD.c.
Secondary Education, Faculty of Education
University of Alberta
tracy.boger@ualberta.ca, 780 XXX-XXXX

Do you understand that you have been asked to be in a research study?	Yes	No
Have you read and received a copy of the attached Information Sheet	Yes	No
Do you understand the benefits and risks involved in taking part in this research study?	Yes	No
Have you had an opportunity to ask questions and discuss this study?	Yes	No
Do you understand that you are free to refuse to participate, or to withdraw from the study at any time, without consequence, and that your information will be withdrawn at your request?	Yes	No
Has the issue of confidentiality been explained to you? Do you understand who will have access to your information?	Yes	No

This study was explained to me by: _____

I have read and understood the attached information letter and agree to take part in this study:

_____ _____
Signature of Research Participant Date

_____
Printed Name

I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.

_____ _____
Signature of Investigator Date

Sample Student Interview Questions and Written Response Prompts

All interview questions will focus on the participants' experiences either supervising or being supervised with classroom management software. Due to the nature of a conversational interview questions may not be asked verbatim and all questions may not be asked if we run out of time.

Introduction:

At the beginning of to the interview I will inform students that I am looking for anecdotes or personal stories that exemplify their experiences being supervised and taught s with classroom management software. Students will then be invited to share any experiences that come to mind at that time. If nothing comes to mind the following questions will be used to prompt student participants.

Can you tell about the time when you first realized a teacher was monitoring you with classroom management software?

Can you tell me about a time when you liked that your teacher used classroom management software? Why?

In your experience can you give me examples of how a computer class with CMS is different than one without CMS?

Can you give me examples of how you used your time prior to and after the introduction of classroom management software?

Using a specific example can you comment on whether you think other students like classroom management software?

Using a specific example can you comment on whether you think your teacher likes classroom management software?

Can you provide examples of how the introduction of classroom management software has effected how your class is run?"

Can you tell me about a time when you (or another student) may have disliked that your teacher was using classroom management software? Why?

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by Research Ethics Board 1 at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615.