Grounded Theory Ethnography of a Chromebook Implementation in a Bais Yaakov School

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ABSTRACT

Digital safety concerns, socio-economic status, pedagogical beliefs, and religious beliefs can all impact technology decisions within a school. Despite the unique contextual factors that influence school technology decision-making, teachers and students are still charged with using technology for teaching and learning in order to be 21st century learners. The purpose of this study was to explore how one Bais Yaakov school community, an all-girls private Jewish school, navigated the tensions of context and technology innovation through their adoption of 1:1 Chromebooks. Grounded theory ethnographic methods and activity theory were employed for data collection and analysis. Technology use was limited, and participants explained that lack of time, fear, frustration, and pedagogical beliefs were reasons that some teachers did not use technology. Practical recommendations from this research include the importance of developing a technology plan designed by all stakeholders and targeted professional development for content
areas. Theoretical recommendations include the discussion of culturally competent Internet use in schools and “media refusal” as a term to describe communities who chose not to integrate technology into educational curriculum.

INDEX WORDS: 1:1 technology, Bais Yaakov, Grounded theory ethnography, Activity theory, Culture and technology
GROUNDED THEORY ETHNOGRAPHY OF A CHROMEBOOK IMPLEMENTATION IN A BAIS YAAKOV SCHOOL

by

MARISSA BALL RIVNER

A Dissertation

Presented in Partial Fulfillment of Requirements for the Degree of Doctor of Philosophy in Instructional Technology in Learning Technologies Division in the College of Education and Human Development

Georgia State University

Atlanta, GA
2016
DEDICATION

This dissertation is dedicated to

George Lawson Rivner.

This dissertation is written in memory of

Col. George Lawson Ball, Jr.

and David Spencer Ball.

May their memories continue to be a blessing.
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“After this, there is no turning back. You take the blue pill—the story ends, you
wake up in your bed and believe whatever you want to believe. You take the red pill—you
stay in Wonderland, and I show you how deep the rabbit hole goes” (The Matrix, 1999).

A doctoral education is a rabbit hole, and I have learned as much from the journey
as I have from the actual dissertation. It was not easy; I became a mother and lost a
brother, and there were times I was ready to quit. And if I were alone on this journey, I
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Table of Contents

LIST OF TABLES ................................................................................................................. ix

LIST OF FIGURES ............................................................................................................... x

Chapter 1: Introduction ................................................................................................. 1

The Problem ..................................................................................................................... 1

Background and Purpose of the Study ........................................................................... 4

Conceptual Framework ................................................................................................. 6

Research Objectives ....................................................................................................... 8

Significance ...................................................................................................................... 9

Study Limitations .......................................................................................................... 11

Study Delimitations ....................................................................................................... 12

Summary ......................................................................................................................... 12

Definitions of Terms ..................................................................................................... 13

Chapter 2: Literature Review ....................................................................................... 16

Educational Context ....................................................................................................... 19

Introduction .................................................................................................................... 19

Single-Sex Education ................................................................................................. 19

Religious Education ...................................................................................................... 26

Jewish Education ......................................................................................................... 29

Technology Integration ............................................................................................... 37
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1 Computing in the classroom</td>
<td>42</td>
</tr>
<tr>
<td>The Digital Divide</td>
<td>46</td>
</tr>
<tr>
<td>Socio Cultural Influences on Technology Integration</td>
<td>50</td>
</tr>
<tr>
<td>Summary</td>
<td>53</td>
</tr>
<tr>
<td>Chapter 3: Methods</td>
<td>55</td>
</tr>
<tr>
<td>Methodology</td>
<td>56</td>
</tr>
<tr>
<td>Context</td>
<td>62</td>
</tr>
<tr>
<td>Exploratory Data Collection</td>
<td>64</td>
</tr>
<tr>
<td>Participant Recruitment</td>
<td>65</td>
</tr>
<tr>
<td>Researcher Background and Role</td>
<td>66</td>
</tr>
<tr>
<td>Data Collection</td>
<td>69</td>
</tr>
<tr>
<td>Semi-structured ethnographic interviews</td>
<td>69</td>
</tr>
<tr>
<td>Participant observation</td>
<td>70</td>
</tr>
<tr>
<td>Data Analysis Procedures</td>
<td>73</td>
</tr>
<tr>
<td>Initial coding</td>
<td>74</td>
</tr>
<tr>
<td>Focused and axial coding</td>
<td>76</td>
</tr>
<tr>
<td>Memo Writing</td>
<td>78</td>
</tr>
<tr>
<td>Activity Systems Analysis</td>
<td>80</td>
</tr>
<tr>
<td>Credibility and Consistency</td>
<td>83</td>
</tr>
<tr>
<td>Ethical Considerations</td>
<td>84</td>
</tr>
</tbody>
</table>
Whitelist: Maintaining modesty................................................................. 125

Difficulties with the whitelist........................................................................ 127

Summary of Findings.......................................................................................... 132

Chapter 5: Activity Theory Analysis ................................................................. 134

Macro System ........................................................................................................ 137

Schoolwide Technology....................................................................................... 137

Micro System ......................................................................................................... 142

Summary .................................................................................................................. 144

Chapter 6: Discussion and Conclusion ................................................................. 149

Research Questions and Answers .................................................................... 150

What happens during the first years of 1:1 computing when a Bais Yaakov school adopts Chromebooks? ................................................................. 150

How do stakeholders (students, teachers, parents and administrators) at a Bais Yaakov school approach teaching and learning with technology during the first years of Chromebook adoption? ................................................................. 151

Why do they approach teaching and learning with technology the way they do?.............................................................................................................. 152

How do religion and culture influence the use of technology? ....................... 152

Discussion of Findings ......................................................................................... 153

Implications of Findings ..................................................................................... 158

Limitations and Suggestions for Future Research .............................................. 161
References ............................................................................................................. 165

APPENDICES ...................................................................................................... 194
LIST OF TABLES

Table 1. Research question and data collection................................................................. 69
Table 2. Interview data ....................................................................................................... 70
Table 3. Spring 2016 Observation Schedule...................................................................... 72
Table 4. Themes and Subthemes from Memos................................................................. 79
Table 5. Student uses of Chromebooks.............................................................................. 112
Table 6. Teacher uses of Chromebooks.............................................................................. 113
LIST OF FIGURES

Figure 1.1. Conceptual Framework. ................................................................. 7

Figure 2.1 Jewish education. .................................................................................. 30

Figure 2.2 Levels of the Digital Divide in Schools (Hohlfeld et al., 2008) ............... 48

Figure 2.3 The PEN-3 Model. ............................................................................. 52

Figure 3.1 First Generation Cultural Historical Activity Theory (CHAT) framework. ... 57

Figure 3.2 Second Generation CHAT Framework. .............................................. 58

Figure 3.3 Third generation CHAT Framework .................................................... 58

Figure 3.4. Activity theory examples. ................................................................... 60

Figure 3.5. Data analysis procedures. ................................................................. 74

Figure 3.6 Activity Systems Analysis. ................................................................. 82

Figure 4.1. The laptop carts. ................................................................................. 88

Figure 4.2. Shavuous Flower Flyer. ..................................................................... 90

Figure 4.3 Character Curriculum Example Materials ......................................... 92

Figure 4.4. Timeline of Chromebook initiative ................................................. 100

Figure 5.1 Third Generation Activity Theory Example ......................................... 136

Figure 5.2 Macro System: Schoolwide Technology ............................................ 137

Figure 5.3 Macro System: Schoolwide Technology with Tensions ...................... 140

Figure 5.4 Micro System: Student-Use Technology ......................................... 142

Figure 5.5 Micro System: Student-Use Technology with Tensions ..................... 144

Figure 5.6 Shared Systems ................................................................................... 147
Chapter 1: Introduction

The Problem

Since the 2001 enactment of The Elementary and Secondary Education Act (ESEA), better known as No Child Left Behind (NCLB), technology in the classroom has become a centerpiece of educational policy. Specifically, a goal of the legislation is to diminish the digital divide and to ensure that every student is “technology literate by the end of 8th grade” ("Enhancing Education Through Technology Act of 2001," 2001). Although 15 years of substantial financial investments by schools for hardware, software, and technology infrastructure has resulted in 97% of teachers having one or more computers in their classrooms (National Center for Education Statistics, 2011), the goal of NCLB has not yet been fulfilled. Improving technology in the classroom remains a national priority, as exemplified by President Barack Obama’s 2015 State of the Union address. The President said, “I intend to protect a free and open Internet, extend its reach to every classroom, and every community and help folks build the fastest networks so that the next generation of digital innovators and entrepreneurs have the platform to keep reshaping our world” (White House, 2015).

School communities face nuanced decisions about integrating technology in the classroom, including, but not limited to, the type of device to adopt, teacher professional development, and Internet safety. These decisions are exacerbated by each school’s unique learning context, highlighting the impossibility of a one-size-fits-all approach to technology integration.

There are currently a variety of approaches to technology device implementation that schools may choose to adopt based on functionality and affordability. For example, schools can
purchase devices for students and classrooms ranging from $200 to $2,000; schools can encourage students to “bring your own device” (BYOD), or schools can implement a combination of the two. Determining the type and number of devices can be influenced by the socio-economic status (SES) of the community, the particular affordances of a specific device, or other factors (Dolan, 2016). Research points to SES as the culprit for lack of resources and technology knowledge, perpetuating racist and classist discrimination in education (Clark & Gorski, 2001; Crow, 2014; Gorski, 2002; Ritzhaupt, Feng, Dawson, & Barron, 2013).

Schools are also challenged by decisions regarding the type of technology professional development for teachers because such development is often dictated by price or neglected altogether (Berry, 2013; Winslow, Dickerson, Weaver, & Josey, 2016). Regardless, technology professional development is integral to developing a technology initiative because teachers need the skills to apply the technology appropriately in a 21st century learning environments (Tondeur, Forkosh-Baruch, Prestridge, Albion, & Edirisinghe, 2016). Thus, in making decisions to include or exclude professional development, and making decisions regarding what type of professional development to fund, schools rely on their unique school context, including taking into account the prevailing pedagogical knowledge of the staff (Belsha & Sanchez, 2016; Tondeur et al., 2016).

Another difficult decision that school communities must make is determining the level of Internet safety that is appropriate for their students. Technology innovation and technology safety can be seen as a rigid dichotomy in school technology decision-making. On one hand, technology is the future of education, and students must be well versed in technology in order to be successful in the 21st century. On the other hand, schools must be vigilant for the safety of the Internet-surfing student by putting aggressive filters and blocks in place. Safety is emphasized
by the E-rate discount requirement that all public and private schools comply with the Children’s Internet Protection Act (CIPA). The E-rate discount program, also called the Schools and Libraries program under the oversight of the Federal Communications Commission (FCC), provides up to 90% discount on Internet access for qualifying schools and libraries. CIPA requires schools to have filters in place to block sites that are “a) obscene, b) child pornography, or c) harmful to minors” (Federal Communications Commission, 2001), and currently 100% of public schools adhere to CIPA rules (Jaeger & Yan, 2009). Schools meet CIPA regulations by determining their own filters and deciding independently how to define “obscene” and “harmful” sites. Each school has to determine for itself, based on pedagogical and cultural beliefs of the school community, where on the spectrum of Internet safety they may best align.

Despite the national push for technology integration, some schools have chosen to avoid technology altogether. These schools choose a technology-free curriculum based on a pedagogical belief that there is merit in unplugged learning, or learning without the use of digital devices (Kang, 2012; Richtel, 2011). Schools such as the Forest Kindergartens take away the necessity of the school building entirely, including computers and their networking systems. These schools have students attend outdoor class during the entire school year, using the outdoors as a classroom and nature as the classroom content (Schäffer & Kistemann, 2012).

Other groups, such as the Amish population in the United States, choose to have technology-free schooling because of religious beliefs (Kraybill, 2014). The Amish are a religious group that lives in rural areas of Pennsylvania, Ohio, and Indiana (Fischel, 2012). A defining aspect of the Amish people is their relationship with antiquated technology. If you visited an Amish community today, you might feel as though you travelled back in time to the 19th century with horse drawn buggies for transportation and one-room schoolhouses to educate
their children (Fischel, 2012). From their perspective, 21st century technology does not have a place in the Amish way of schooling.

However, despite the unique contextual factors, including religion and beliefs about education, that influence school technology decision-making, teachers and students are still charged with using technology for teaching and learning in order to be 21st century learners. In this study, I have explored how one unique school community navigated the tensions of context and technology innovation.

**Background and Purpose of the Study**

The Schachter School¹ was an all-girls, private, *Bais Yaakov*, Jewish Orthodox high school in an urban area in the United States. It was also a school that had limited technology prior to the 2014 school year due to both pedagogical and religious beliefs. During the summer of 2014, the school built a new campus, and the administration decided to include wireless Internet into the building’s infrastructure. The administration also decided to purchase Chromebooks for the students and teachers to use during the school day. The goal of this research was to examine what happens when Chromebooks were introduced to teachers and students in a formal schooling context that previously had limited exposure to technology.

*Bais Yaakov* was the first widespread movement for Orthodox girls schooling (Ginsparg, 2009). It began in 1917 in Poland by a woman named Sarah Schenier. Before this movement, there was no formal education for Orthodox Jewish women. However, in the United States, there was no umbrella organization for *Bais Yaakov* schools. Anyone who wanted to open up a high school with the *Bais Yaakov* label could do so. There are no consistent characteristics across *Bais Yaakov* schools in the United States except their religious affiliation. *Bais Yaakov*

¹ Pseudonym
high schools are Yeshivish Orthodox. In her dissertation, *Defining Bais Yaakov: A Historical Study of Yeshivish Orthodox Girls High School Education in America 1963-1984*, Leslie Ginsparg explains,

*Yeshivish* described this population because they centered their lives around *yeshivot*, institutions of higher Jewish learning, and accepted *roshei yeshiva*, the heads of *yeshivot*, as their leaders. In addition, by the 1980s, the population identified itself using this colloquial term, as opposed to other descriptions favored by scholars such as *Sectarian Orthodox* or *Ultra-Orthodox*. Modern Orthodox and Hassidic groups also used the term *Yeshivish* to refer to this population. (2009, pp. 8-9)

Further discussion about the unique religious context of the school is described in Chapters 2 and 3.

The administration team (i.e. the principal, the assistant principal, and the financial director) of the Schachter School decided to purchase Google Chromebooks instead of other technology devices. Chromebooks are technology devices that look like a laptop with a screen, an attached keyboard, and a track pad mouse, but the hard drive does not allow users to store data. In the first half of 2014, more than one third of all educational hardware purchases were Chromebooks (Herold, 2014). Introduced in 2011, the Chromebook is a laptop that uses a Google operating system and is not equipped for installation of any software applications such as the Microsoft Office suite. Instead, Chromebook users use Google Drive and Google Applications. Files are saved in the cloud, and word processing, presentation, and database applications are online. Schools are attracted to Chromebooks because of their low price point (around $300) and the Google Apps for Education suite (Herold, 2014). The Chromebook is one device that schools are using to meet a 1:1 ratio of device to student.
The Chromebook’s dependence on the Internet and the school’s imposed firewalls on the Internet create challenges for using the Chromebooks in teaching and learning. I was interested in how the stakeholders in the school community navigate these tensions of safety, religion, and learning. This context was particularly interesting to me because I am Jewish, and I attend a Modern Orthodox synagogue. I also taught in a liberal elementary Jewish day school where technology was readily accessible; the Internet had light filters, and integration was encouraged.

The purpose of this study was to explore how an all-girls religious private Bais Yaakov high school navigated the tensions adopting an Internet based Chromebook.

**Conceptual Framework**

A conceptual framework is “the system of concepts, assumptions, expectations, beliefs, and theories that supports and informs your research” (Maxwell, 2005, p. 39). In this dissertation, I relied on digital divide (Gorski, 2002; Reinhart, Thomas, & Toriskie, 2011), student-centered technology integration (Jonassen & Land, 1999; Jonassen, Peck, & Wilson, 1999), and culturally relevant pedagogy (Gay, 2010; Ladson-Billings, 1995) theories (Figure 1.1) to create a lens through which I viewed my inquiry. Culturally relevant pedagogy and student-centered technology integration topics are related through the topic of culturally relevant technology integration. Digital divide literature connects all of these topics in that there is a achievement gap between schools that do include meaningful technology integration into their curriculum and those that do not include technology integration.

Educators who exemplify culturally relevant pedagogy value a student’s home culture, including race, ethnicity, religion, and language. Essentially, this framework helps motivate and empower students and gives a voice to students’ own knowledge. Student-centered technology integration is a way of thinking about technology in the classroom that puts students in control of
their own learning experience. Instead of the technology being used as a replacement for traditional classroom experiences (e.g. a Smartboard instead of a chalkboard), technology is seen as a tool in a constructivist-learning environment (Jonassen et al., 1999). These two concepts can coexist as positive classroom practices that promote student academic and emotional growth. Some researchers have started to explore the intersection of these two topics as culturally relevant technology integration (Eglash, Gilbert, & Foster, 2013; McLoughlin, 1999).

Figure 1.1. Conceptual Framework.

The digital divide is a term that was introduced in the early 1990’s to describe the different between those that have technology access and those that do not (Ritzhaupt et al., 2013). Generally, the term digital divide points out technology access and literacy differences between socioeconomic status (SES), race, gender, and ethnic groups (James, 2008; Reinhart et al., 2011; Ritzhaupt et al., 2013). A “second-level digital divide” describes the differences in the ways technology is used in schools and is based on the technology knowledge of classroom teachers.

The digital divide is “the gap between individuals, households, businesses, and geographic areas at different socio-economic levels with regard both to their opportunities to
access information and communication technologies, and to their use of the internet for a wide variety of activities” (Organisation for Economic Co-operation and Development, 2001, p. 5).

The digital divide is commonly defined in marketing and educational research as the difference in technology access, specifically the use of the Internet, between groups of people (e.g. Badran, 2014; Barzilai-Nahon, 2006; Mesch, 2012; Milioni, Doudaki, & Demertzis, 2014; Ritzhaupt et al., 2013; Van Volkom, Stapley, & Amatro, 2014).

Access to the Internet remains the key factor in the way the digital divide is described, and many researchers report that wealthy majority populations have greater access to computer resources than poorer minority populations (Banister & Reinhart, 2011). Other researchers have reframed this dialogue by finding that minority populations do have access to technology (e.g. gaming systems, televisions, mobile devices, computers), but there is a difference is how these populations use the technological tools (Banister & Reinhart, 2011; Henderson, 2011). The difference in the way the technology is used between two populations is referred to as the “second-level digital divide”(Reinhart, Thomas, & Toriskie, 2011; Ritzhaupt et al., 2013).

**Research Objectives**

The research explored the following questions:

- What happened during the first years of 1:1 computing when a Bais Yaakov school adopted Chromebooks?
  - How did stakeholders (students, teachers, parents and administrators) at a Bais Yaakov school approach teaching and learning with technology during the first years of Chromebook adoption?
  - Why did they approach teaching and learning with technology the way they do?
How did religion and culture influence the use of technology during the first years of implementation of Chromebook technology?

**Significance**

As budgets for school personnel decline, school technology budgets continue to expand (Chaker, 2009). The nation is concerned with student achievement, and technology is seen as the silver bullet for change. President Obama’s Race to the Top initiative includes best practices for blended learning initiatives and personalized learning experiences (Department of Education, 2015). While the word “technology” is not stated openly, both of these strategies require the access to Internet and teacher technology knowledge. However, integrating technology in ways that align with the national educational agenda is expensive. Technology continues to be purchased for the classroom, and schools in the United States spend about $400 per student per year on technology (Johnson, 2012). The hefty price tag of classroom technology is another reason why researchers continued to explore the benefits and challenges of technology integration.

Much digital divide research describes the difference in physical access between two communities with different socioeconomic status (Badran, 2014; Banister & Reinhart, 2011; Cox et al., 2013; James, 2008; Organisation for Economic Co-operation and Development, 2001). This study was different because the topic of study was a school community, in the United States, that previously had limited access to the Internet due to purposeful cultural and pedagogical choices, not socioeconomic status. The limited Internet access and use due to cultural and pedagogical choices was a type of digital divide, but this type of digital divide was not currently represented in the literature.
Many studies explored the implementation of 1:1 laptops or other devices in middle and high schools (Broussard, Hebert, Welch, & VanMetre, 2014; Donovan, 2010; Richardson et al., 2013). These studies are generally evaluative and give readers information about broad statewide or district-wide initiatives. This study was not evaluative; rather, it was exploratory and highly contextualized. Participants in this study have not had laptop or computer initiatives previously, the school has a small student body (n = 44) and most teachers are part time (n = 23).

There are recent studies about innovation diffusion and implementation of technology devices in schools (Broussard et al., 2014; Keppler, Weiler, & Maas, 2014; Richardson et al., 2013; Topper & Lancaster, 2013); however, most schools in the 21st century already have tackled the initial introduction of classroom computing to teachers and students (Ritzhaupt et al., 2013). This was the Schachter School’s first technology initiative. Schools that lag behind in technology integration will face new challenges and barriers to implementation that schools that integrated technology earlier did not face (Barzilai-Nahon, 2006; Mesch, 2012). Studying a context such as the Schachter School will also provide some insight for early adopters of the “next big innovation” (think drones, virtual reality, etc.) for schools. It is imperative that we study opportunities such as this to learn more about the unique challenges to late adopters and the present-day challenges for the next wave of technology adoption.

In addition, this was an important study because it helped the students and faculty at the Schachter School improve upon learning and teaching, informing targeted professional development for its teachers. The findings from this study also opened a dialog between teachers, students, and administrators to discuss the place and purpose of technology in the Schachter School. The results can also help schools that have similar relationships with technology make technology decisions.
Results of this study may affect many other Jewish Orthodox day schools’ relationships with technology. The Jewish community is small in the United States. According to a recent Pew study, less than 2% of the American population describes themselves as Jewish, and of that 2%, Orthodox Jews make up 10% of the American Jewish population (Storz & Hoffman, 2012). However, most Jewish day schools are considered Orthodox (Schick, 2014), and Orthodox day schools are the only Jewish day schools in which enrollment is growing (Schick, 2014). There are Orthodox day schools across the country, similar to the Schachter School, that are reluctant to welcome Internet-driven technology into their classrooms due to the potential exposure of unwanted information to students. This study can help those schools determine paths to technology integration that align to their unique educational missions.

The results of this study may also help other schools with strict policies for student Internet use. Some schools have Internet filters that block up to 89% of Internet access (Bayliss, 2014). Without questioning the current filters in schools, teachers are asked to make a challenging job more difficult: integrate technology with limited Internet access. This study, due to the religious implications for a strict web filter, can help other educators in settings where the Internet access is limited for safety reasons and CIPA compliance.

**Study Limitations**

The purpose of this study was to explore the implementation of 1:1 Chromebook initiative at an all-girls private high school, and ethnographic-case study methods aligned with this purpose. The most important research instrument in this study was me, the researcher. I am human, and errors were possible, if not inevitable. To address generalizability, I employed thick description of my findings in hopes that individuals extract something meaningful in specific cases that may apply to his or her own situation (Merriam, 2014).
I am also Jewish, and while this has helped me gain access to this community, I was an outsider to the Bais Yaakov school community. I interviewed parents, students, teachers, and administrators. One limitation of my study was that the participants may have told me what they thought I wanted to hear, rather than their perspectives. I also might have misinterpreted their responses. To help navigate this potential limitation of my study, I used member-checking techniques. I have shared the transcripts of interviews and the final results of data analysis with my participants.

**Study Delimitations**

Within the scope of this study, I explored the implementation of the Chromebooks at the Schachter School. I did not address the relationship of the Chromebooks to academic achievement or other evaluative measures. I focused on how the devices are physically shared, how they were used in teaching and learning, and what students, faculty, and administration felt about these devices.

**Summary**

The purpose of this research was to explore what happens when an all-girls Orthodox high school adopts 1:1 Chromebooks. I analyzed interviews and observations in order to document the first years of a 1:1 initiative. Through this research, I established recommendations for other schools with similar pedagogical and religious beliefs.
Definitions of Terms

I have created a list of terms and definitions that were used in this dissertation document. Most words that are italicized in the dissertation document can be found below with the corresponding definition.

21st century learners: Learners that leverage technology for “access to more learning resources than are available in classrooms and connections to a wider set of “educators,” including teachers, parents, experts, and mentors outside the classroom” (Office of Educational Technology, 2010) in order to better prepare students for the future of our community.

Activity theory: also called Cultural-Historical Activity Theory (CHAT), is a theoretical framework that originates from the works of Karl Marx and his concept of activity—a practical combination of materialism and idealism (Engeström, Miettinen, & Punamäki-Gitai, 1999). Activity theory offers researchers and practitioners an alternative approach to the analysis of human learning. Instead of learning preempting action, learning happens during the activity (Jonassen & Rohrer-Murphy, 1999).

Bais Yaakov: a private Orthodox Jewish high school for girls inspired by the movement started by Sara Schenier in Poland in 1917 (Ginsparg, 2009)

Chromebook: a laptop that uses a Google operating system and is not equipped for installation for any software applications such as the Microsoft Office suite. Instead, Chromebook users utilize Google Drive and Google Applications. Files are saved in the cloud, and word processing, presentation, and database applications are online.
**Culture:** the shared background of the community that includes religious and ethical beliefs. For example, there is a school rule that the women at the school wear long skirts for modesty purposes. This is part of the school’s culture that is rooted in a religious belief.

**Day school:** private Jewish school that teaches Judaic subjects, Hebrew language, and secular subjects.

**Digital divide:** “inequalities in access to computers and the Internet between groups of people based on one or more social or cultural identifiers” (Gorski, 2002, p. 28)

**Division of labor:** Within the Activity Theory framework, “the division of labor prescribes the task specialization (designers, developers, producers) by individual members of groups within the community or organization” (Jonassen & Rohrer-Murphy, 1999, p. 64)

**Mediating artifacts:** Mediating artifacts can be rules, instruments, methods, structures, or procedures; however, the artifacts cannot be regarded in isolation. They are an “integral and inseparable part of human functioning (Engeström, 1991, p. 12)”. There are many artifacts that are coexisting in the learning space at the Schachter School such as bilingual curriculum, part-time faculty, Chromebooks, etc.

**Subjects:** Within the Activity Theory framework, activities have subjects, a person or group of people that exist in the system of interest.

**Objects:** Within the Activity Theory framework, objects are the idea or physical item that a subject aims for.

**Operations:** Within the Activity Theory framework, operations are menial tasks that build into actions and require the least amount of purpose or thought (Jonassen & Rohrer-Murphy, 1999)

**Actions:** Within the Activity Theory framework, many actions together create an activity.
Community: Within the Activity Theory framework, “the community negotiates and mediates the rules and customs that describe how the community functions, what it believes, and the ways that it supports different activities. Within the community, individuals support different activities” (Jonassen & Rohrer-Murphy, 1999, p. 66)

Religion: “a personal set or institutionalized system of religious attitudes, beliefs, and practices” (Merriam-Webster’s online dictionary, n.d.)

Rules: Within the Activity Theory framework, “rules inherently guide (at least to some degree) the actions or activities acceptable by the community, so the signs, symbols, tools, models, and methods that the community uses will mediate the process” (Jonassen & Rohrer-Murphy, 1999, p. 64)

Yeshivish Orthodox: a population of Orthodox Jews who “center their lives around yeshivot, institutions of higher Jewish learning, and accept roshei yeshiva, the heads of yeshivot, as their leaders” (Ginsparg, 2009, p. 8)
Chapter 2: Literature Review

According to Rocco and Plakhotnik, a literature review is intended to “determine if a topic is researchable, to report the results of closely related studies, and to establish the importance of the current study in relation to previous studies (2009, p. 125).” By attending to these three duties of a literature review, I provided further reasoning for the research study. The purpose of this study was to investigate what happens when 1:1 Chromebooks are introduced to teachers and students in an all-girls religious high school.

The literature was divided into three areas: (a) the educational context, including single-sex education, religious education, and Jewish education; (b) technology integration, including technology integration in K-12 schools, 1:1 implementations, and the digital divide; and, (c) socio-cultural influences on technology integration. These areas of the literature provided a background to my current study because they informed readers about specific parts of the dissertation topic. I chose these three more general areas of literature because I found no research on my specific school context and research interest-- Bais Yaakov schools and technology integration. I visited the ERIC database powered by EBSCOhost, and I chose “Bais Yaakov” and “Bais Yaakov technology” as my initial search terms. There were no results for either set of terms. I changed the search terms to “Ultra-Orthodox technology,” and there were 59 results with title such as Worldview Construction and Identity Formation in Ultra-Orthodox Elementary Schools and Attitudes and Beliefs Associated with Mammography in a Multiethnic Population in Israel. While many of the articles in the “Ultra-Orthodox technology” search were not specifically about Bais Yaakov schools, some articles found through this method were included in this chapter under the appropriate topic headings. In the following paragraphs, I explained my search techniques and how I arrived at my literature sources. For all of my topics,
I used ERIC/ EBSCOhost as database search engines, and I also limited the searches to peer reviewed articles from 2005 to 2015. In this review, I also included articles and books that I have come across through citations and coursework if they pertain to the topic.

I chose to create three topics of interest for this literature review. The first was based on the context of my study, and in this review, it was dubbed the educational context. Because of the limited research in the area of technology integration in Bais Yaakov schools, I fractioned the defining characteristics of the school as topics for study. A Bais Yaakov school is an all-girls, Ultra-Orthodox private high school. I divided my research regarding the context into smaller sets using Banks’s notion of cultural groups (2001) (i.e., sex and religion) that seem to be better addressed in the literature. I partitioned the context into single-sex education, religious education, and Jewish education. In the following paragraphs, I explained how my search for those areas of literature was conducted.

For my search on the topic of single-sex education, I used the search term, “single-sex education.” There were 57 results to my query. I read the abstract of each of the 57 results to determine whether or not the article would help me to better understand the topic. I eliminated articles that were focused on historical topics, single-sex classrooms within coeducational schools, postsecondary topics, boys only, after-school programs, teacher gender, court rulings, and military academies.

For the religious education section, I started with an EBSCOhost search with the term “religious education,” and 4,979 results were listed. I altered my search to “religious schools” and limited results to peer reviewed academic journals from 2005-2015. There were 425 results. I limited those results to the subject “elementary secondary education” and the result was 112 articles. I limited those results to the subjects “private schools” and “parochial schools,” and
there were 29 articles that met those qualifications. I read through each abstract, and I eliminated articles that were focused on legality issues of vouchers for religious education and the teaching of evolution in religious schools.

For the Jewish Education segment within my Educational context section within my literature review, I used the search terms, “Jewish Education” in ERIC through EBSCOhost. I limited the results to articles written in the past 10 years and peer reviewed articles only. Some subject terms I selected (within the initial results) were “Religious education” and “day schools.” I removed studies that were based in other countries and after school programs.

The second area of literature I included in this review was technology integration. Within the topic of technology integration, I included research concerning 1:1 computing in the classroom and the digital divide. A simple search of “technology integration” in ERIC resulted in 8,975 articles. Because I am particularly interested in how the technology was used within the classroom, I used the search terms, “technology use in the classroom” and got 387 results. I narrowed this topic down by selecting the following subject terms: (a) technology uses in education and (b) educational practices. Also included in the technology integration section of the literature review are articles and books that I have found through previous projects and coursework.

Within the technology integration section of this literature review, I included a focused discussion on 1:1 computing studies. To find these articles, I used the search terms, “1:1 computers” and got eight results. For the digital divide part of the technology integration section, I found fifteen articles when I included the search terms “digital divide” and the subject terms “educational technology” and “elementary secondary schools.”
The third and final section of my literature review includes articles on the topic of Socio-cultural Influences on technology integration. To address the context (all-girls Orthodox Jewish school) and the innovation (1:1 Chromebooks) together, there was not much research in educational technology publications that examined a cultural context that is religious and the diffusion and adoption of a technology in a school. I reviewed health and marketing research to find examples of how medical interventions might be addressed in different cultures. I used search terms such as “socio-cultural influence on technology integration” and refined those results using subject areas such as “culture” and “technology.” After reading the abstracts of these articles, I included the ones that seemed most fitting to my research questions.

**Educational Context**

**Introduction**

Since there was limited research concerning Bais Yaakov schools, I looked to other topics to learn more about general characteristics of the Bais Yaakov school: (a) single-sex education, (b) religious education, and (c) Jewish education. In this section of the literature review, I will explore these topics. The first topic, single-sex education, begins with a current status report of single-sex education. The section continues to address specific studies that evaluate the efficacy of single-sex education. The second topic, religious education, begins with a historical overview and current status report of religious schooling in the United States. Then, I explore the intersection between religion and multicultural education. Lastly, I review three articles that address religious education. The third topic is Jewish education. In this section, I provide background on Jewish education in the United States, and I further describe Orthodox schooling, in particular.

**Single-Sex Education**
Today, single-sex education is available in the United States, with pockets of single-sex education in both public and private settings. In 2010, there were 40 public single-sex schools and about 900 public schools that provided some single-sex classroom options for students (Patterson & Pahlke, 2011). A school with single-sex options means that some classrooms in a single school are coeducational and others are single-sex. In these schools, parents and students select which type of classroom (single-sex or coed) they would prefer for the year (Patterson & Pahlke, 2011).

There are also many private schools that offer single-sex options. The National Coalition of Girls’ Schools, a national advocate for girls’ schooling, lists 165 all-girls private schools on their website (2015). In both the public and the private sectors, single-sex schooling affects a small percentage of the population. However, in 2006, when the federal government approved single-sex classrooms using public funding as part of No Child Left Behind, more schools introduced single-sex classrooms within schools and districts opened single-sex campuses across the country (Crawford-Ferre & Wiest, 2013; Pahlke, Hyde, & Allison, 2014). The trend toward single-sex education grows despite the scant research that exists. The research shares mixed results on the efficacy of this type of schooling (Crawford-Ferre & Wiest, 2013; Hughes, Nzekwe, & Molyneaux, 2013; Johnson & Gastic, 2014; Pahlke et al., 2014; Patterson & Pahlke, 2011). These mixed efficacy results are often attributed to the “student selectivity” of single-sex schools and classrooms (Sax, Riggers, & Eagan, 2013).

One reason that advocates of single-sex schooling give is to aid in closing the gender-gap in science, technology, engineering, and math (STEM) subjects (Baron, Bell, Corson, Kostina-Ritchey, & Frederick, 2012; Brown, 2013; Hughes et al., 2013; Marsh et al., 2013; Okopny, 2008). The gender-gap in STEM subjects is the limited representation women have in
the sciences at all educational stages (Hughes et al., 2013). Hughes, Nzekwe, and Molyneaux (2013) compared STEM identity formation between students in coeducational and all-girls informal science education settings. STEM identity formation is a student’s, “ability to see themselves as the kind of people who could be legitimate participants in STEM through their interest, abilities, race, gender, and culture” (Hughes et al., 2013, p. 1980). In this mixed-methods study, the authors compared two summer camps for students interested in STEM using pre/post survey data and teacher and student interview data. One camp was coeducational and lasted one week, and the other camp was all-girls and lasted two weeks. One of the main characteristics of both camps was that STEM professionals from different backgrounds were available as mentors and role models for the campers. The researchers found that having role models that were similar to the sex of the students aided in a positive STEM identity formation (Hughes et al., 2013). They found this to be true in both settings, and the authors noted that pedagogy helped in STEM identity formation rather than class roster make-up (Hughes et al., 2013).

The decision to make a school single-sex or to make classrooms within a coeducational school single-sex is left to principals and other decision-makers within a school ecology (Fabes, Pahlke, Borders, & Galligan, 2015). Fabes et al. (2015) assessed the attitudes toward single-sex schooling with a national sample of public school principals. There were 260 respondents to the survey. Sixty-seven participants were principals of single-sex schools, and 193 participants were principals from coeducational schools. Most single-sex school principals made the decision to adopt single-sex schooling because of academic concerns ($M = 3.27$, $SD = .93$ on a 4-point scale), and coeducational principals either were content with the academic outcomes in their schools or did not see single-sex education as a effective reform method for their schools (Fabes
et al., 2015). Both groups noted that there are negative results to single-sex schooling such as student and teacher dissatisfaction, and both groups shared that there was a lack of hearty research in favor of single-sex education (Fabes et al., 2015). This differs from the decision to be a singled-gendered school at Schachter High School, the site for this research study. Schachter High School was an all-girls school based on religious requirements that, after a certain age, girls and boys should be educated separately (Graff, 2008).

Often, decisions to attend a single-sex school are based on the potential academic outcomes that can be attributed to the school environment (Crawford-Ferre & Wiest, 2013; Pahlke et al., 2014; Sax et al., 2013). Sax et al. (2013) surveyed 6,552 women who were entering college about their past educational experiences to determine whether levels of academic engagement differed between single-sex and coeducational private and public schooling. The researchers used multi-level modeling and t tests to measure the effects of single-sex or coeducational schooling might have on activities like studying, interacting with teachers, tutoring, and extra curricular involvement. They found that women who attended all-girls schools were more likely to be engaged in academic tasks even when the authors controlled for background characteristics. The authors note that the methods have limits, and the results of the study should be regarded with caution. The authors could not account for student selectivity in their analysis. This means that students who self-select an all-girls school might exhibit characteristics (e.g. academic engagement) that should not be attributed to the single-sex environment.

Billger (2009) composed a similar study as Sax et al. (2013). Using data from the National Educational Longitudinal Study, Billger focused on private school students only. She found that students who attend all-girls private schools are just as likely to pursue college
education as female students who attend co-ed private schools. Billger also addressed the selection bias, and she offers her results with the caveat that the selection bias could not be controlled (2009).

Generally, communities support single-sex education because of the belief that girls and boys learn differently (Pahlke et al., 2014). There is research to defend the belief that boys and girls have brain-based biological differences and single-sex education allows for teachers to use sex-specific strategies for instruction (Bonomo, 2010; Eliot, 2010; Gurian & Stevens, 2004; Gurian, Stevens, & Daniels, 2009; Lee, Marks, & Byrd, 1994). Critics of single-sex education explain that single-sex schooling is based on gender and racial stereotypes and they question the legality of the single-sex public school movement (Brown, 2013).

Pahlke, Hyde, and Allison (2014) completed a meta-analysis on 184 studies in the United States to help determine how single-sex education compares in performance and attitudes to education in coeducational settings, and they found that there was little evidence to prove a substantial difference between single-sex settings and coeducational settings. However, there were some limitations to their analysis because of the available research on single-sex education. For example, most of the studies are not experimental in design because students are not randomly placed in single-sex classrooms; attendance in a single-sex classroom cannot be compulsory (Pahlke et al., 2014). There are also additional factors such as religious beliefs; religious, racial, or financial privilege; and the context motivation of teachers in single-sex settings that are difficult to address. Pahlke et al. (2014) found that some of the uncontrolled studies provided support in favor of single-sex schools, while most of the controlled studies showed little or no support for the advantage of single-sex schools over coed schools. The
authors suggest that these studies that show gains, despite the lack of methodological rigor, help to fuel the support for single-sex education.

Single-sex education is both a public and private school alternative (Meyer, 2008), and while there is almost no rigorous research to show that single-sex education provides better academic outcomes (Pahlke et al., 2014), parents and students continue to send their children and themselves to single-sex schools and classrooms. In one study of an all girls public school in Texas, students and parents were interviewed separately about their choice to attend an all-girls middle school (Bell, Corson, & Baron, 2014). Both students and parents explained that they chose the school based on the academic rigor of the school and the fact that successful public figures (e.g. Hillary Clinton) went to single-sex schools (Bell et al., 2014). Students and parents also shared beliefs that the instruction at an all-girls school would be tailored to the way girls learn, and both in-class distractions (e.g. farting noises) and out-of-class distractions (e.g. relationship drama) would be removed (Bell et al., 2014). However, students differed from their parents concerning the feedback from their peers regarding the choice to attend the all-girls school. The students’ peers told the students that their decision to attend an all-girls school was “retarded”, they would “be weird”, and they were “gonna come out as a Lesbian” (Bell et al., 2014, p. 24). These girls who chose to attend the all-girls school despite disparaging comments from their peers, provide an example of resistance to peer meanings of heteronormativity (Bell et al., 2014).

Attending an all-girls school played a role in identity creation in young girls (Baron et al., 2012), and there was some research that showed that gender stereotypes were formed and perpetuated as there was more attention put on gender and sex in the classroom (Pahlke et al., 2014). Jackson (2010) explained further that separating students into single-sex classrooms and
schools propagated heteronomativity and created a binary that left no room for intersex or transgender students. She continued to explain that single-sex schooling promoted homophobia by associating teenage distractions with the opposite sex, attempting to rule out the possibility of same-sex teenage relationships (Jackson, 2010). On the other hand, in some single-sex settings, where same-sex relationships were the only type of relationships that students could have, lesbian and gay relationships may be more accepted. Johnson and Gastic (2014) found that gender nonconforming students in an all-girls school were less likely to be bullied than gender nonconforming students in a coeducational or all-boys environment.

All-girls schools can showcase both oppressive and emancipative qualities depending on how traditional or progressive the school might be (Ball & Gewirtz, 1997). For example, a traditional all-girls school relies on femininity to drive curriculum and a progressive all-girls school might provide more outlets for feminist discussions. There could also be a contradictory mixture of these two frameworks within the same school setting (Ball & Gewirtz, 1997).

In summary, single-sex schools were small in number in both public and private settings, but enrollment in this method of schooling was on the rise (Pahlke et al., 2014). Research was mixed on the academic and attitudinal benefits of single-sex schooling. Selectivity bias was difficult to control, so results that conclude positive relationships between single-sex schooling and academic outcomes should be reviewed with caution. Parents played a large role in their child’s attendance in a single-sex classroom or school because attendance was an opt-in option in both public and private settings. Parents may send their child to a single-sex classroom or school due to the belief that a single-sex setting was more academically rigorous and teachers can use specific strategies to teach one sex.
The topic of single-sex education was relevant to my study because the context was an all-girls school, and attendance to the school was an opt-in, self-selected choice. My setting differed from most of the all-girls schools in the research because, as an Orthodox Bais Yaakov school, most students came from families that would not allow for their child to attend any other school besides a Bais Yaakov school. Given that SHS was the only Bais Yaakov school in the community, students’ and parents’ choices were limited between attending SHS and living at home and boarding at another Bais Yaakov school in a different Jewish Orthodox community in the United States.

At SHS, as I will discuss later in the dissertation, students were responsible for learning a dual curriculum, and students had equal amounts of class time in Judaic and secular subjects. Obviously, academic expectations for a student at SHS varied from those of a student in a secular single-gender school due to the difference in school hours devoted to specific subjects.

**Religious Education.**

Since the beginning of American schooling, religion has played a prominent role in how students are educated. Catholic schools were established as a response to the common school phenomena because Catholic leadership worried about Protestant teachers proselytizing Catholic students (Gross, 2014). According to the National Center for Education Statistics, almost 68% of all private schools have some sort of religious affiliation and educate nearly 80% of all private school students (Broughman & Swaim, 2013). Around 3.6 million U.S. students are served by religious private schools (Broughman & Swaim, 2013). This number does not include religious charter schools (Bailey & Cooper, 2009). Today, private and charter religious schools in the United States represent the diversity in our nation with schools promoting Muslim, Jewish,
Christian, and other religious values (Broughman & Swaim, 2013; Proehl, Starnes, & Everett, 2015)

In public schooling, religion is neglected in an effort to please the general public and
avoid legal troubles by maintaining the distance between church and state (Waggoner, 2013).
Avoiding the topic of religion in the classroom may be a disservice to students who value
religion as a defining characteristic of their culture (Dallavis, 2011). In much multicultural
education literature, religion is ignored or viewed as a challenge to responsive pedagogy,
although religion is included in Banks’ (2001) six groups that help to describe an individual.
The other five groups are: race/ethnicity, gender, social class, nationality, and
exceptionality/nonexceptionality. In psychology literature, a group is the social system that
perpetuates a culture, and is a “a collectivity of persons who share an identity, a feeling of unity”
(Banks & Banks, 2001, p. 13) and people participate in these groups as members (Bullivant,
1993). A person is a member of multiple groups simultaneously, and a person may identify more
strongly with certain groups than with others. These groups build an individual’s identity and
are important dimensions for educators to understand in order to be most effective.

In an editorial of a special issue of Multicultural Perspectives that addresses religion in
education Lisi and Rios (2006, p. 1) asked: “How do we, who are multicultural educators, think
about and respond to these spiritual and religious aspects of our students’ (and our own)
identities but still abide by principles of pursuing justice, advocating inclusion, affirming
difference, and ensuring quality education for all?” In this example, Lisi and Rios are excluding
religion from the defining aspects of multicultural education but admitting that religion is an
important pillar of identity. This struggle with religion, education, and inclusion allows
researchers and educators to avoid the topic altogether, ultimately dodging a deeper understanding of students and their home culture (Dallavis, 2011).

Understanding a student’s culture includes learning more about the student’s life at home. If religion is a defining aspect of that child’s life at home, it should be acknowledged by educators in a classroom as part of a culturally responsive pedagogy (CRP). Dallavis (2011) argues two main ideas: 1) religion is a dimension of culture that has been ignored in broad CRP literature and 2) faith-based schools may explicitly benefit from teachers’ acknowledgement of students’ religious beliefs. His article continues to explain how Catholic schools have leveraged “attention to student religious identity, belief, and practice” to “strengthen the bridge that narrows the gap between the cultures of home and school” (2011, p. 142).

In a meta-analysis concerning religious education and the achievement gap, Jeynes (2010) found that religious identity and intact family structure helped to reduce the achievement gap. Jeynes used data from the National Education Longitudinal Survey (NELS) (from 1988-1992) and 28 different research articles for his analysis. Granted, the NELS data is from almost twenty years before his article was published, and Jeynes included two of his own articles in the analysis.

One strand of research within the topic of religious education is the relationships between parental religiosity and school choice (Reichard, 2012; Sander & Cohen-Zada, 2012). Reichard (2012) found that there was no statistically significant difference between the religiosity of parents who send their children to religious private schools with vouchers or who pay tuition to send their children to religious private schools. Sander and Cohen-Zada (2012) look at the causal effect of religiosity on school choice. They found that families that attend religious
services often are more likely to send their children to a religious school (Sander & Cohen-Zada, 2012).

In summary, religion in academic research was consistently an overlooked aspect of a student’s cultural background due to lack of representation in critically responsive pedagogy (Dallavis, 2011). Regardless, religion was a factor in many private (and some public charter) schools, and it should be explored. There were connections between family life and school choices (Sander & Cohen-Zada, 2012), and achievement and religiosity (Jeynes, 2010). This was relevant to my study because religion was a defining factor of the context. Half of the students’ school day was devoted to religious studies.

**Jewish Education**

Eastern European Jewish immigrants began to arrive in great numbers to the United States from 1881-1914 (Feiman-Nemser, Tamir, & Hammerness, 2014; Graff, 2008). In addition to public schooling, some immigrants opened supplementary religious schools that met after school. Other groups opened day schools, where students would have more time to devote to religious texts. Most Jewish day schools had an Orthodox affiliation until the late 1950’s (Graff, 2008; Sarna, 1998), and Orthodox day schools are still the largest sect of Jewish day school in America (Schick, 2014). Jewish day schools are loosely affiliated with the national associations of their corresponding religious sect, but there is no control relinquished to the umbrella organization; these schools operate independently from one another (Feiman-Nemser et al., 2014). For some of these schools, the purpose was to ensure that students could integrate seamlessly into a modern American society. For others, the purpose was survival by protection from the modern American society. A hundred years later, Jewish day schools still represent both of these camps (Feiman-Nemser et al., 2014).
Since 1998, every five years, the Avi Chai Foundation completes a census of the Jewish Day Schools in the US. The most recent census is from 2014, and the following information is attributed to that census. The number of students receiving private Jewish education has increased 37% since 1998. There are currently 861 Jewish day schools in the United States, and the average number of students per school is 296 (Schick, 2014). This accounts for 5.5% of the private school landscape in the United States (Broughman & Swaim, 2013). Orthodox schools consist of 87% of all Jewish day schools with the other 13% consisting of Conservative, Reform, and Community schools. Included in the Orthodox umbrella are Centrist Orthodox, Chabad, Chassidic, Immigrant/Outreach, Modern Orthodox, and Yeshiva (see Figure 2.1).

A differentiating factor within these groups is whether it follows a single-sex or coeducational model. A “Modern Orthodox” school according to the survey is Modern Orthodox but coed, and a “Centrist Orthodox” school is Modern Orthodox and single-sex (Gorsetman & Sztokman, 2013). Many schools demonstrate how religious they are based on gender separation. Schools that are coed are seen as lenient in regard to religious laws, and schools that are single-sex are seen as stringent in regard to religious laws (Gorsetman &
Sztokman, 2013). Schachter High School, the site for this dissertation’s research, was considered “Yeshiva Orthodox” if restricted to the choices of the survey.

In Ultra-Orthodox communities, boys and girls are educated separately at the high school level. In the United States, Holocaust-era refugees immigrated in the 30’s and 40’s and brought with them their models of schooling from Europe (Graff, 2008). Some Orthodox girls’ schools, both in American and abroad, follow the Bais Yaakov (Beth Jacob) model started in 1917 by Sarah Schenirer in Poland. This is the model that the Schachter School employs.

A Jewish day school is charged with teaching Judaic topics, secular topics, and character development (Brody & Gorsetman, 2013; Limor, 2012; Shargel, 2012). Modesty is a value in Judaism that can be reflected in the way Jewish people dress, specifically how women dress.

All around the Orthodox Jewish world, religiousness has become synonymous with women’s dress. The length of the skirt, sleeve, or neckline is used like a measuring stick of religious identity—the more skin is covered, the more religious the girls—and their surrounding communities—are believed to be. (Gorsetman & Sztokman, 2013, p. 127)

The length, style, and fabric of a skirt all have nuanced meanings that reflect how religious a girl might be. A jean skirt and flip flops might mean that the Jewish girl is more modern and wants to fit in with the larger American community. Although she is dressed modestly, she is not wearing a long wool skirt, pantyhose, and leather loafers. Dress for the Orthodox woman is like a “religious logo” (Gorsetman & Sztokman, 2013, p. 128), and it shows how religious identity is attached to what a woman might wear.

Gorsetman and Sztokman (2013) surveyed over 172 Jewish educators about school issues concerning gender and curriculum. In a question about dress code, respondents listed rules for their schools. While the original list was two pages long, I have included some highlights here:
- Skirts at knee.
- Solid color skirts/shirts with collars.
- Skirts below knee, shirts with sleeves longer than cap.
- Knee-length skirts and sleeves that are longer than cap.
- Sleeves to elbows, skirts to knees, closed neck (collarbone covered).
- Skirts that cover the knees while sitting, collared shirt with only one button open.
- Three-buttoned collared shirt with half or long sleeve, solid skirt that covers the knees.
- A-line skirts below the knee, no slit; button-down blouses; sleeves at least elbow length.
- Skirts covering the knee while standing, neckline fist below neck, sleeves to the elbow (Gorsetman & Sztokman, 2013, pp. 129-130).

In Jewish day schools, much attention is put on dress of women and girls. The belief is that if one is dressed modestly on the outside, they are modest and pure on the inside. The dress is a constant reminder of religion and the wearer’s role in that religion (Gorsetman & Sztokman, 2013). With such strict dress codes, teachers also have to enforce and abide by these strict dress codes.

Boys also have dress codes, but they are much less restrictive. Many dress codes for boys ask boys to wear their kippa (head covering) and tzitzit (ritual fringes), pants, and a button down or polo shirt (Gorsetman & Sztokman, 2013). This focus on dress and modesty puts unequal pressure on women and girls, as the rules are much harder to follow. Attire is an example of one of the tensions between modernity and tradition in a religious Jewish school.
Exhaustive dress codes, a single-sex student body, and emphasis on a dual curriculum are characteristics of Orthodox girls schools. However, there is a larger body of Jewish education research, mostly published in the *Journal of Jewish Education*, which includes research from all facets of Jewish education. This includes informal education, adult education, religious school education, and day school education. For the purpose of this review, I limited my search to articles concerning Orthodox day school education or articles that seemed relevant to my particular research questions.

Teachers in Jewish day schools come from many backgrounds, teaching and non-teaching (Birkeland & Feiman-Nemser, 2009; Brody & Gorsetman, 2013; Feiman-Nemser et al., 2014; Krakowski, 2011). Generally, there is only on-the-job training for the unique educational context. However, some traditionally Jewish post secondary schools (e.g. Brandeis and Yeshiva University) have teacher preparation programs that are specifically for preservice teachers who aspire to teach in a Jewish day school (Birkeland & Feiman-Nemser, 2009; Feiman-Nemser et al., 2014). Context specific teacher education programs are not unique to Jewish education. Feiman-Nemser et al. (2014) chronicle the teacher education programs in three contexts that prepare pre-service teachers to teach in three different types of mission-driven schools: Catholic schools, Jewish day schools, and urban schools. Specifically, the Day School Leadership Through Teaching (DeLeT) program at Brandeis University is a thirteen-month Masters of Arts in Teaching program that prepares post-baccalaureate students to teach in non-Orthodox Jewish day schools. The program promotes three layers of context in a Jewish day school: the classroom community, the school community including parents, and the broader society. Strong parental involvement in Jewish education is expected because parents are “paying customers” (Feiman-
Nemser et al., 2014, p. 68) and generally want both a secular education and opportunities for religious learning.

Roso (2013) used an ethnographic case study to explore the character curriculum at a Jewish day school. Roso found that the character-building curriculum was interwoven throughout the regular curriculum in the school (2013). Students were consistently referred back to the Torah or Talmud for reasoning, and there were ample opportunities for community service. Teachers also modeled a collaborative and collegial community for students (Roso, 2013).

One part of the curriculum in all Jewish schools is Hebrew language. Schachter (2010) wrote an article for the Hebrew practitioner to offer strategies for the many challenges Hebrew teachers face. One such challenge is the definition of reading. Reading Hebrew in many communities does not include understanding Hebrew. In many schools where Hebrew is only necessary for a student’s bar/bat mitzvah, there is lack of motivation (Schachter, 2010). To combat this and decoding difficulties, the author suggests that teachers break up text into smaller chunks and have schools and synagogues make Hebrew a more visible language on signs and handouts (Schachter, 2010).

Brody and Gorsetman (2013) explore the effects of professional development led by an outside expert in a Jewish day school context. They found that because the outside expert had shared values and understood the context of the school, the relationship was successful. The relationship also extended over 7 years. The school was committed to developmentally appropriate practice (DAP) (Bredekamp & Copple, 1997), and the outside expert framed the new Torah curriculum with DAP. The school also prioritized teacher leadership, and the outside expert taught small cohorts of teachers the curriculum so that the teachers could share with teachers not in the cohort. For professional development led by an outside expert, the authors
recommend utilizing existing collaborative learning networks, including teachers early in professional development decision-making, and extending time frames for project completion (Brody & Gorsetman, 2013).

Krakowski (2011) critiqued *The International Handbook of Jewish Education* (Miller, Grant, & Pomson, 2011). He shared that many areas of Jewish education are addressing tensions of tradition versus innovation (Krakowski, 2011). Overall, he noted there was a lack of research that was centered on classroom practices, and many researchers did not include students in their analysis. Krakowski also shared that there was a dearth of research on Ultra-Orthodox schools (Krakowski, 2008, 2011). He postulates that this is a result of the community’s insular nature and limited relationship with academic researchers (Krakowski, 2008, 2011). Krakowski urged the research community to study gender in Jewish education, as this is also a limited topic in Jewish education research (Krakowski, 2011).

In liberal Jewish high schools, the dual curriculum of secular and religious studies is often unbalanced with most resources attending to the secular education of the students (Shargel, 2012). This is most likely because students want to be academically prepared and competitive for prestigious universities (Shargel, 2012). Many liberal Jewish schools attempt to alleviate the imbalance by integrating Judaic studies curriculum into the general studies curriculum (Shargel, 2012). Shargel (2012) investigated how faculty interpreted curricular integration during a *Darwin/Genesis themed week* in a liberal Jewish high school. Using grounded theory, Shargel found that administrators had a more philosophical view of the integration. The teachers viewed curricular integration as an independent teaching activity within the walls of their own classrooms. They did not see it as a cross-classroom exercise (Shargel, 2012).
Ultra-Orthodox, or haredi, schools do not attempt to integrate Judaic and secular studies (Krakowski, 2008). On the contrary, the main reason secular studies are included in the curriculum is so that students could one day get a job (Krakowski, 2008). Krakowski (2008) researched three all-boys Ultra-Orthodox elementary schools. Data collection included parent surveys; interviews with teachers, students, and Rabbiem (plural of rabbi); observations; and documents. Krakowski found that students in these three schools disregarded the secular studies teachers, as the teachers were most often not part of their religious community. As a response to the misbehavior of the students, Rabbiem have taken the place of secular studies teachers. Within the scope of his larger study, Krakowski studied two secular studies classrooms. A non-Orthodox Jewish woman who had a degree in education managed one classroom. A Rabbi with no formal secular education past high school taught the other class. Krakowski noted that while behavior norms were more disruptive in the non-Orthodox teacher’s classroom, the Rabbi mainly lectured and there was limited exemplification of pedagogical content knowledge (Krakowski, 2008; Shulman, 1986). Krakowski also explained that this shift toward using Rabbiem as secular studies teachers further sanitizes the secular content for the students, and the students no longer have direct contact with the secular world (2008).

In summary, single-sex schooling, dual curriculums, and strict dress codes define Orthodox Jewish education. There is a strong separation within Jewish schooling—some schools attempt to protect their students from the outside, non-Jewish world while embracing tradition while others attempt to integrate their students to the larger American community. This struggle between tradition and modernity, insular and integrated, is a recurring theme in Jewish education. This directly relates to my study as Chromebooks are a technology that challenges the traditional Orthodox religious schooling practices.
Technology Integration

Larry Cuban (1986) points out that new educational technologies seem promising, but most are never realized to their full potential. This idea rings true throughout the course of the last century. A picture of a classroom from 1915 would look similar to a 2015 classroom; there would be desks (for both the students and the teacher) and some sort of lectern. The 2015 classroom might have a whiteboard instead of a chalkboard, but overall, the set up would be almost identical. Ertmer and Ottenbreit-Leftwich (2010) discuss that many fields shift with changing technologies more easily and quickly than education. For example, if a new technology is introduced in the medical field, it is adopted quickly because the implementation of the new tool could save time, money, lives, or any combination of the three. The same is true in business and industry. Instead of showing 20 houses face-to-face, a realtor can share pictures of 20 houses to a client over email and cuts the time invested in the process in half. However, the field of education and its slow adaptation to integrate technology is unique.

Technology has been seen as a catalyst for teaching and learning in the 21st century through the use of strategies such as problem-based learning (Hmelo-Silver, 2004), game-based learning (Gee, 2003), simulations, and virtual worlds (Kafai, 2006). Student learning is enhanced when the learning environment is perceptually rich, and technology is one way that can occur in a school building (Jonassen, Peck, & Wilson, 1999).

Classroom teachers have been using technology in innovative ways in their classrooms. Dawson (2012) wrote about a statewide action research project where 350 teachers from 16 different districts described their technology integration practices. For this project, compensated teachers developed a research question, described the research context, collected data within their own classroom, and then analyzed the data. Then, the projects were collected and analyzed.
by the researcher. Dawson (2012) found that most of the goals for the technology integration projects were student mastery of specific content. Dawson (2012) also found that whole class direct instruction was the primary use of the technology in 43% of the classrooms and the computer was the instructional tool. Word processing software and presentation software were mentioned in 61% and 63% of the teachers’ projects, respectively (Dawson, 2012). This study was unique in that teachers developed the inquiry in their own classrooms, and thus the project immediately benefited them through reflection and implementation (Dawson, 2012).

Technology integration is apparent in diverse school populations. Mantegna (2012) described her experiences as a classroom teacher teaching U.S. literature to a group of high school English language learners (ELL). She used Wikis and digital video to help students access the content of the course. Students were invested in digital class discussions, and students were able to take time to edit their work before it was posted for the class (Mantegna, 2012). Her class also created a digital video documentary that shared the students’ ELL experiences (Mantegna, 2012). Mantegna (2012) found that this student-created documentary allowed students to create their own voice.

Rosen and Jaruszewicz (2009) wrote a theoretical article describing developmentally appropriate technology use (DATU), specifically for elementary age students. They claim that technology is ubiquitous in young children’s lives, so the argument whether or not technology should be used in education is a moot point. They advocate for DATU, and in their article, they describe some ways that teachers and teacher educators can address this in their classrooms. They are “(a) teacher technological literacy, (b) developmental and cultural considerations, (c) responsible decision-making, (d) scaffolding strategies, and (e) documentation and assessment” (Rosen & Jaruszewicz, 2009, p. 170). Cultural considerations seem to be the most
relevant strategy to this dissertation study. The authors explain that cultural considerations such as the type of technology access and use the students have at home should inform the integration of technology at school (Rosen & Jaruszewicz, 2009).

Technology in the classroom has been touted as a cure-all for educational reform since the introduction of computers into classrooms in the 1980’s, but some argue there has been little widespread return on the investment (Cuban, 1986, 2001; Hixon & Buckenmeyer, 2009). The school context is one of the many factors that can influence whether or not technology is used in the classroom (Ertmer & Ottenbreit-Leftwich, 2010; Levin & Schrum, 2013). Levin and Schrum studied eight exemplary school districts around the country using cross-case analysis and found that there are certain factors that aid in leveraging technology in a school building. These factors seem to work best when addressed simultaneously. They are: (a) vision, (b) distributed leadership, (c) school culture, (d) technology planning and support, (e) professional development, (f) curriculum and instructional practices, (g) funding, and (h) partnerships (Levin & Schrum, 2013).

Vision is one of the factors and is described by Levin and Schrum’s participants as necessary for successful technology implementation (2013). This means that the leadership of the school has a clear idea of what role the technology may have in instruction. It also means that the administration is forward thinking and developing a plan for future years in order to work toward that vision. The leadership also shares the vision with the teachers so that everyone is aware of the role of technology. Distributed leadership is another characteristic of these award-winning schools. Administrators help teachers find their strengths and encourage teachers to work in teams to solve problems. School culture in technology-rich schools was unique in that the students were expected to be good digital citizens, and teachers and administrators
trusted students to take ownership of the devices and the way that they are used in and out of the classroom. The school culture also included celebrating small successes and encouraging experimentation in the classroom. Another characteristic of these successful schools was designated staff for technology. This technology planning and support also included an open dialogue about issues with the devices so that problems could be addressed in a timely manner.

Professional development was another common priority. Professional development in these successful contexts was continuous, differentiated, and localized. School administrators harnessed their own teachers to lead short professional development sessions during the school day or after school in faculty meetings. There was little outside professional development. Most professional development was in small groups or one to one. Teachers in these technology rich contexts worked hard to determine logical inclusion of technology devices in their curriculum. There was more opportunity for just-in-time learning when students were connected to the Internet, and some teachers shifted their teaching styles to more student-centered strategies. The last two dimensions of successful technology integration contexts are funding and partnerships. Administrators noted that they had to be entrepreneurial and creative in funding. Some of the schools changed the definition of textbooks in their budget to include other instructional materials, which could include technology. Partnerships with business and universities are important, but partnerships with parents that include clear communication is a must (Levin & Schrum, 2013).

Some studies look more closely at parts of the school system in isolation. Teachers, in particular, are an area of study because of their close relationship to the act of technology integration (Angers & Machtmes, 2005; Purcell, Heaps, Buchanan, & Friedrich, 2013; Walker Beeson, Journell, & Ayers, 2014). Ultimately, the teacher determines the content of the
classroom and how it will be delivered. While the entire school context is important, it is also necessary to examine the practices of teachers and their relationships to technology integration.

According to Hew and Brush (2007), there are six different barriers to technology integration. They are 1) knowledge and skills, 2) attitudes and beliefs, 3) school infrastructure, 4) resources, 5) administration, and 6) content culture. Ertmer (1999) categorizes these barriers into first order (external) and second order (internal). First order barriers to technology integration would include lack of access, insufficient time to use or plan for the technology, and limited support from administration. Second order barriers would include personal beliefs about pedagogy and computers (Ertmer, 1999).

While there are many barriers to widespread infiltration of technology integration, there are islands of innovation that continue to push technology integration boundaries in their own classrooms (Ertmer & Ottenbreit-Leftwich, 2010; Halverson & Smith, 2009; Mantegna, 2012). These teachers use technology as a teaching strategy just as they would use manipulatives or scaffolding (Rosen & Jaruszewicz, 2009). Ertmer & Ottenbreit-Leftwich (2010) explain that these teachers have been enabled by their attitudes and beliefs about technology, and that this is the most important area to address in terms of technology integration.

In summary, teachers are using technology in widely different ways (Allsopp et al., 2012; Beilke, Stuve, & Williams-Hawkins, 2008; Dawson, 2012; Israel, Marino, Basham, & Spivak, 2013; Mantegna, 2012), and researchers stress that context mandates the type of technology use that occurs within the classroom (Hew & Brush, 2007; Levin & Schrum, 2013; Rosen & Jaruszewicz, 2009). Within the context, teachers’ technology literacy and beliefs about pedagogy and technology also impact the technology decisions within the classroom (Ertmer & Ottenbreit-Leftwich, 2010; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012).
There are many different uses of technology in the classroom, and there are multiple factors that determine the type of technology use (or non-use).

**1:1 Computing in the classroom**

One widespread technology initiative in K-12 schools is 1:1 computing. 1:1 is a movement in education that is controversial, and even the definition is not agreed upon. Richardson and his colleagues describe “1:1” as

…a ratio of devices to the number of students. Each student thus has one device in his or her hands. The confusion arises, however, when we begin to look more closely at these definitions. For example, there is no agreed-upon definition of a “computing device,” which could mean a laptop computer, a netbook, a tablet computer, or even a smartphone. (2011, p. 5)

Penuel further defines “1:1” in terms of meeting these three guidelines:

1. providing students with use of portable laptop computers loaded with contemporary productivity software (e.g., word processing tools, spreadsheet tools, etc.),
2. enabling students to access the Internet through schools’ wireless networks,
3. a focus on using laptops to help complete academic tasks such as homework assignments, tests, and presentations. (2006, p. 331)

For the sake of this research, I will define 1:1 using Penuel’s definition with a modification to the first guideline, in order to include Chromebooks. Instead of “…loaded with contemporary productivity software,” I contend that the rest of the clause reads, “…able to run productivity tools.”

In the early 1990’s, computer to student ratios were 16:1 (Elmer-DeWitt & Bjerklie, 1991). When a school introduced computers, the school also had to introduce software to go
along with the computers. Without software, the computer itself was just an expensive paperweight. The school’s administration had to determine which software programs would be beneficial to the teachers and students. Now, software has become obsolete because the Internet can provide the same tools that once could only be obtained through a software purchase. Social networks, mobile devices, and broadband Internet have changed the way most people use computers (Rainie, 2012), so naturally, these technologies would change the way students and teachers in classrooms compute (Thiele, Mai, & Post, 2014).

Kevin Larkin’s research on 1:1 computing in primary school classrooms resulted in a recommendation for 1:2 access as opposed to 1:1 access (2011). Using Activity Theory as a framework, Larkin found that the ratios of computers in the classroom impacted how the teachers would assign computer work during the day. In classrooms with one computer for every two students, teachers planned more cooperative work than individual assignments. In contrast, teachers who had 1:1 devices in the classroom tended to assign more independent student work. He also found that the devices were used 30% more of the time when the teachers had a 1:2 ratio of devices to students. However, unlike my research setting, this data was collected in a primary school.

The 1:1 movement is occurring in educational spaces across the globe (Penuel, 2006). Claro, Nussbaum, López, and Díaz studied 1,529 Chilean schools that participated in the Mobile Computer Labs (MCL) initiative. This state sponsored project provided third grade students an opportunity to use laptops with a 1:1 ratio. Using survey data, researchers learned that the computers were most often used in language arts and mathematics. They also learned that urban schools were more likely to use the computers for teacher-centered instruction than rural schools. Unlike other research studies (Larkin, 2011; Storz & Hoffman, 2013), Claro et al. found that
pedagogy did not change with the introduction of 1:1 computing. The researchers concluded that this was due to lack of teacher preparedness. Teachers claimed they needed more instruction on how to integrate the technology into their curriculum. Overall, the researchers recommended more teacher professional development and in-school assistance in order to maximize the 1:1 initiative (Claro, Nussbaum, López, & Díaz, 2013).

In Sweden, Lindqvist studied one group of high school students who had 1:1 laptops from a project sponsored by Umeå University and the Municipality of Umeå (2013). With 927 participants, the researcher found that most activities that used the laptop in class were individual and led to more independent working time. This is similar to Larkin’s finding that when given the opportunity to have 1:1 access, teachers tended to employ that access as a replacement for an individual assignment. Students also reported difficulty in managing tasks on the computer, and they often struggled with work/play on the computer. The researchers also mentioned that the differences in technology knowledge between teachers and students made some assignments difficult for both groups of stakeholders (Håkansson Lindqvist, 2013).

Lei and Zhao investigated the 1:1 implementation of laptops in a middle school setting in the Midwestern United States (2008). Lei and Zhao used surveys and interview methods to study how students were using their laptops in school and at home. They found that over 80% of the students used the laptops for homework and 70% used the laptops for research purposes. Students also reported that the laptops were helpful for staying organized and taking notes. The researchers found that students’ technology proficiency increased over the course of the year as did the overall GPA for the student body. One third of the parents surveyed felt that their child was spending too much time on the laptops (Lei & Zhao, 2008). The most interesting thing about this research is the large percentage of students who use the laptop for research. While this
study was framed as a usage study, it would have been interesting to learn more about how the laptops are used. Are these students required in their class to use the laptop for research? Are the students being taught how to properly research topics using the Internet? In this dissertation research, using the laptops for “research” is an issue because students can only view “whitelisted” sites. This means that teachers have to put sites on an approved list before students can access them. Essentially, teachers themselves are doing the research for the students, and students are limited to the websites their teachers find for them.

One of the reservations teachers and administrators may have regarding the introduction of technology, specifically 1:1 resources, in the classroom is “off task” behavior (Fried, 2008; Jackson, 2012; Tallvid, Lundin, Svensson, & Lindström, 2015). There is research that supports the concept that unstructured laptop use in class (i.e. taking notes) actually decreases student performance on coursework (Aguilar-Roca, Williams, & O'Dowd, 2012; Fried, 2008). Tallvid et al. (2015) found that ethical discussions in the classroom led by the instructor regarding laptop use (instead of banning laptops altogether) did not deter “unsanctioned” laptop use and over the course of three years, as student technology use increased in complexity, unsanctioned laptop use increased with sanctioned laptop use.

Drayton, Falk, Stroud, Hobbs, and Hammerman (2010) studied science departments in three high schools that were past the implementation phase of 1:1 computing. They found that teachers and students felt that the Microsoft Office Suite (Word, Excel, Powerpoint) were beneficial to teaching and learning and were used frequently during the school day. Teachers also reported that 90% of student research during the school year requires Internet access. Teachers found that technology was helpful for illustration in cases where physical observations were unavailable or impossible.
Many studies regarding 1:1 research in schools focus on the implementation phase (Claro et al., 2013; Lei & Zhao, 2008; Penuel, 2006). My study also will focus on this phase, but it will employ qualitative measures. It differs from these other studies because of the small scale of the school (only 44 students), and the unique cultural background of the students and many faculty members.

Research focused on 1:1 computing in classrooms can be organized into studies about academic achievement and studies about use of the tools during phases of the tools’ implementation. Since many districts spend large amounts of money on 1:1 devices in K-12 schools, there is a need for evaluative studies in order to validate the spending. Generally, researchers find moderate increases in math and language arts scores (Warschauer & Tate, 2015) and changes in teacher pedagogy (Storz & Hoffman, 2013), particularly an increase in constructivist pedagogical strategies (Becker, 1999; Cavanaugh et al., 2011; Larkin, 2011). However, in university level classrooms, where large lecture halls are necessary and universities are not spending money on laptop initiatives, researchers find that unstructured laptop use decreases student performance (Aguilar-Roca et al., 2012; Fried, 2008; Kay & Lauricella, 2011). Some reports call for more professional development for teachers (Anthony, 2012; Claro et al., 2013).

The Digital Divide

While more and more school communities are becoming connected, whether with a 1:1 initiative or not, there is not a national or global standard for educational technology access. This leads to an inequity in technology resources and how those technology resources are used in the classroom. This inequity is often referred to as the digital divide. The digital divide can be defined as “the differences between the connected and those not online at all (Hargittai, 2010, p.
At the rudimentary level, Hargittai’s definition refers to access. Access is the number of devices in homes or schools. Access does not take into account how the device is used. However, the digital divide can also be used to describe the differences in the ways that populations use the technology and Internet. Researchers (e.g., Hohlfeld, Ritzhaupt, Barron, & Kemker, 2008; Reinhart et al., 2011; Ritzhaupt et al., 2013) have developed a framework for delineating these two types of digital divides. The first-level digital divide refers to access alone, and the second-level digital divide describes how the technology is used.

In the United States, Internet connectivity and device accessibility are greater than other countries around the globe. Specifically in classrooms, Ritzhaupt et al claim, “nearly 100% of U.S. public schools now provide Internet access for students (2013, p. 292).” However, this does not solve all digital divide problems. While there may be Internet connectivity in all schools, there is no universal baseline standard of quality. One school may have one computer and dial-up Internet, and another school may have multiple laptop carts and broadband wireless connectivity. This digital divide regarding type of device and quality of connectivity is part of the changes President Barack Obama promised in his 2015 State of the Union speech. He said, “I intend to protect a free and open Internet, extend its reach to every classroom, and every community and help folks build the fastest networks so that the next generation of digital innovators and entrepreneurs have the platform to keep reshaping our world (White House, 2015).”

Quality of connectivity and quantity of technology devices is not universal in the United States. Researchers (e.g., Gorski, 2002; Hayden, 2003; Norris & Conceicao, 2004) have consistently connected socioeconomic status (SES) and race to the types of digital access communities have. Researchers (e.g., Reinhart et al., 2011; Ritzhaupt et al., 2013) have also
connected SES and race to the ways that digital resources are used within a community. Thus, both first-level and second-level digital divides are more prevalent in communities of color and low SES.

Many schools with minority populations “receive little or no opportunities to use computer technologies in productive and creative modes (Banister & Reinhart, 2011, p. 11)” Hohlfeld et. al offer a third level of digital divide, and that is student empowerment (2008) (see Figure 2.2).

![Figure 2.2 Levels of the Digital Divide in Schools (Hohlfeld et al., 2008)](image)

Hargittai found in her research that socioeconomic status, gender, and cultural background reflect in how the individual uses the Internet (2010). In a survey study with 1,060 college freshman, she found that women, individuals from a low SES background, and Hispanic
users use the web in less diverse ways than their counterparts. She also found that Internet user skill is correlated to diversity in Web use.

Hess and Leal (2001) found urban schools with a high population of African-American students had fewer computers per student than other urban schools. However, they also found that those schools were more quickly increasing the number of computers in their buildings. It seems as though school administrators and district level administrators are aware that lack of computers in the classroom is an issue, and they are working to improve access (Hess & Leal, 2001).

Reinhart et al. (2011) take the 2nd level digital divide theory and frame it within K-12 education. They found that physical/digital and social factors have an impact on how teachers use technology within their classroom. Schools with a higher socioeconomic status population tend to use technology to promote higher order thinking skills. “Students who use higher-order thinking are most likely information producers while students who do not use higher-order thinking are most likely consumers of existing information (Reinhart et al., 2011, p. 187).”

While much of the research in the United States focuses on the digital divide between SES populations and different races, the assumption is that if there is a more equitable distribution of resources, these digital divides would disappear. However, what happens when the populations limits technology access by choice? Is technology now a necessary building block in youth education? I propose there is another factor when examining the digital divide in the United States, and that is choice. Some populations choose not to embrace technology as the panacea for a 21st century education, but are they missing out on something powerful or are they dodging a bullet?
Socio Cultural Influences on Technology Integration

It is difficult, even when an idea is ground-breaking, to accept and use a technology within a context (Rogers, 2010). At times, when there is a dearth of research in a particular area, it is helpful to look beyond the obvious literature for similar situations. Howard and Rennie (2013) do this as they look beyond 1:1 school-wide implementation research to examine the insecticide-treated bed nets as a preventative measure for malaria. They learned from their research that health professionals were having arguments about whether or not the bed nets should be provided for free because if the nets were free, patients would not value them and underutilize the nets. This is similar to the argument about whether or not computing devices should be given to each student (Howard & Rennie, 2013). Here, I look beyond the educational technology literature to find situations where technology is introduced into a context-specific setting where there is some backlash to the innovation due to cultural beliefs.

In some cultural groups and in some situations, technology is not seen as inherently helpful. For example, advanced technology used in birthing is seen as a barrier to some groups (Kornelsen, 2005). Another example might be fluoride in drinking water supplies. Some cultural groups of people find this type of technological intervention unnecessary and contradictory to the community belief system (Hill, 2013).

Health innovations have been thwarted by local culture. One example of this is in Nigeria where the rate of mother-to-child HIV infection is high. Iwelunmor and her colleagues conducted a meta-study to learn more about the socio cultural relationships concerning mother-to-child HIV transmission. Some studies found that the desire to build a family was more important than appropriate care. They also found positive relationships between close and
inexpensive counseling and educational facilities and prevention of mother-to-child HIV transmission (Iwelunmor et al., 2014).

One way health professionals design intervention to provide culturally competent services is by utilizing the PEN-3 conceptual framework. Designed by Airhihenbuwa (1999), this model helps professionals focus on community and group attitudes and beliefs instead of on the individual, as is the norm in health intervention. Airhihenbuwa explains that a focus on the individual lends itself to benign moralization, while a judgment on a group of people can be considered blatantly racist or discriminatory. Airhihenbuwa continues to clarify that even though a judgment on individual appears harmless, this silent racism/sexism/classism is detrimental to society. The PEN-3 model (see Figure 2.3) helps practitioners design health interventions for groups while addressing the group’s culture (Airhihenbuwa, 1999). The PEN-3 model consists of three areas: cultural identity, relationships and expectations, and cultural empowerment. Each domain contains three designations that make up the acronym PEN (e.g. Person, Extended Family, Neighborhood). The Cultural Identity domain is the port of entry into the community. This is where the innovation may begin to infiltrate. The Relationships and Expectations domain describes the beliefs a group or individual hold about a certain innovation and the structures (physical and theoretical) that exist in a community that help or hinder the innovation. Cultural Empowerment asks researchers and practitioners to examine the positive beliefs that a community may have regarding health, then the existential beliefs that have neither positive or negative consequences, and lastly, the negative beliefs that result in negative health behaviors (Airhihenbuwa, 1999; Airhihenbuwa, Makoni, Iwelunmor, & Munodawafa, 2014; Iwelunmor et al., 2014).
Marketing research also addresses the socio-cultural influence on adoption of an innovation. For example,

García, Dorward, and Rehman (2012) conducted a study exploring small-scale dairy farmers in Mexico and their adoption of technologies such as farming advancements such as advanced seeding, pesticides, and machinery and animal husbandry techniques such as artificial insemination and de-worming medication. They found that socio-economic status and education had an impact on whether or not farmers used advanced technologies in their dairy production. Another farming study in India examined the introduction of agricultural technology with Buksa tribal farmers. Awais and Khan (2014) found that government extension agents needed to tailor communication to the farmers since their traditional methods did not work due to literacy issues. In both cases, researchers recommended more individualized and culturally appropriate instructional delivery (Awais & Khan, 2014; García et al., 2012).
Health and sanitation is a priority across the globe. One technology that was developed to promote sanitation is the Urine Division Dehydration Toilet (UDDT) because of its ability to treat waste onsite. Uddin, Muhandiki, Sakai, Al Mamun, and Hridi (2014) found that there were cultural barriers to the implementation to this device despite the inherent need and health benefits for the community. One barrier was the local religion. The study was conducted in Bangladesh in rural Muslim community. The residents’ religious beliefs prohibited touching fecal matter, and this led some residents to choose not to install the UDDT. However, within the population that welcomed the UDDTs to the community, there was still a lack of adoption due to high costs associated with the technology (Uddin et al., 2014).

**Summary**

This study described how Chromebooks were used in a unique context with specific attention to the implementation of the cultural and religious influences on the technology. This research can serve as a resource to leaders of other schools with similar cultural or religious concerns regarding safety and modesty. The findings from this study reinforced the current 1:1 implementation and technology integration literature. There was not much research within Jewish education Ultra-Orthodox contexts, so this research also helped to fill that void.

Single-sex schools in the US are not compulsory, and parents and students generally make the choice to attend a single-sex school together (Bell et al., 2014). The research on single-sex schools are mixed. The culture of a single-sex school can be empowering or it can perpetuate stereotypes; the academic rigor in a single-sex school can be advanced or it can be similar to a coeducational setting (Pahlke et al., 2014). Acknowledging students’ religious beliefs in a school setting can help a teacher more completely meet the needs of a student pedagogically (Dallavis, 2011). All-girls Orthodox Jewish schools have unique characteristics
such as a strict religious dress codes (Gorsetman & Sztokman, 2013), dual-curriculum (Limor, 2012), and bilingual classes (Avni, 2012). All of these contextual factors (single-sex, religious, Jewish) combined make the setting unique and complex.

The technology integration literature points to context as a determining factor on how technology is used in the classroom (Rosen & Jaruszewicz, 2009). Teacher beliefs and school culture are other factors that help influence technology integration (Ertmer et al., 2012). Key findings in 1:1 research include the importance of teacher professional development (Claro et al., 2013; Håkansson Lindqvist, 2013; Larkin, 2011) and structured use of laptops can be more beneficial for students as opposed to unstructured laptop use (Aguilar-Roca et al., 2012; Fried, 2008; Tallvid et al., 2015). However, the definition of “successful” 1:1 implementation remains unique to each context and is difficult to define.

Like technology integration literature that touts teacher technology buy-in, health and marketing research agrees that stakeholders must buy-in to the technology before it is used within a context. Without appropriate communication and perceived usefulness by the culture, the introduction of the innovation is unsuccessful (Airhihenbuwa, Kumanyika, Agurs, & Lowe, 1995; Airhihenbuwa et al., 2014).
Chapter 3: Methods

As stated in chapter 1, schools are charged with developing technology plans for the classroom that are unique to each school’s context, highlighting the impossibility of a one-size-fits-all approach to technology integration. The literature review in chapter 2 indicated a need for further examination of what happens when a Bais Yaakov school adopts Chromebooks. Bais Yaakov schools have many challenging requirements for students and teachers such as dual curriculums, strict dress codes, daily prayer, and emphasis on character building (Bechhofer, 2005; Ginsparg, 2009; Gorsetman & Sztokman, 2013; Limor, 2012). A shift toward more technology in the classroom is widespread in public schools and other private schools (Claro et al., 2013; Drayton et al., 2010; Topper & Lancaster, 2013), and the Schachter School embraced the technological trend. As schools became more dependent on the Internet for web-based teaching and learning applications (Schaffhauser, 2009; Wilks, Cutcher, & Wilks, 2012), more school stakeholders were concerned with privacy and safety concerning these Internet-based applications (Tanz, 2015). The Bais Yaakov setting was unique and warranted further investigation because, in much of the 1:1 implementation literature, the studies were evaluative (i.e. concerned with whether or not the implementation was successful). I was interested in how the devices are being used.

In chapter 3, I will describe the methods that I used to do this research including the context, participants, data collection and data analysis. The dissertation research explored the following questions:

- What happens during the first years of 1:1 computing when a Bais Yaakov school adopts Chromebooks?
How do stakeholders (students, teachers, parents and administrators) at a Bais Yaakov school approach teaching and learning with technology during the first years of Chromebook adoption?

Why do they approach teaching and learning with technology the way they do?

How do religion and culture influence the use of technology during the first years of implementation of Chromebook technology?

In this chapter, I will explain my methods for this research including the (a) methodology, (b) context, (c) exploratory data collection, (d) participants, (e) researcher background, (f) data collection, (g) data analysis, (h) credibility and consistency, (i) ethical considerations, (j) methodological limitations and delimitations, and (k) summary.

Methodology

My research methods are informed by ethnography and activity theory. Ethnography and activity theory can be harmonious frameworks as they both aid a researcher to explore a context thoroughly (Stinnett, 2012). I did not conduct a traditional ethnography in this dissertation. Traditional ethnography is a positivist approach, with the researcher maintaining distance and objectivity (DeWalt & DeWalt, 2010; Stinnett, 2012). However, postmodern critiques have dismantled this perspective, questioning whether or not an objective viewpoint is possible considering the researcher’s privilege (Stinnett, 2012). Ethnographic methods such as rich data description and participant narratives allow readers to learn deeply about the context. However, to write about the participants and their culture in a way that is an accurate picture of reality is difficult, if not impossible. Ethnographers risk “narcissism, paternalism, and the reinscription of colonizing techniques” (Stinnett, 2012, p. 130). To combat these potential ethical dilemmas, I included activity theory as my theoretical framework. Using activity theory allows me, the
researcher, to compartmentally examine a context and concurrently assess the environment as a whole.

Activity theory, also called Cultural-Historical Activity Theory (CHAT), is a framework that originates from the works of Karl Marx and his concept of activity—a practical combination of materialism and idealism (Engeström et al., 1999). Activity theory offers researchers and practitioners an alternative approach to the analysis of human learning. Instead of learning preempts action, learning happens during the activity (Jonassen & Rohrer-Murphy, 1999).

![First Generation Cultural Historical Activity Theory (CHAT) framework.](image)

There are three iterations of the Activity Theory framework. Lev Vygotsky’s (1980) activity theory is the first generation of activity theory (Figure 3.1). In this model, the subject (the individual or group of individuals), the object (the goal of the activity), and the mediating artifact/tool (artifacts and social norms) interact with each other in order to make meaning of an activity. This version of activity theory illustrates that activities are non-linear, and environments are influenced by multiple factors. First generation activity theory was developed as an alternative response to behaviorism and response-stimuli notions of human development (Yamagata-Lynch, 2010).
A.R. Leontiev continued the work of Vgotsky and developed second-generation activity theory (Figure 3.2). This version of activity theory helps to explain human learning as object-oriented and environmental instead of as a purely mental interaction. In second-generation activity theory, the collective is introduced, and group goals and objects are included in the model (Engeström et al., 1999; Yamagata-Lynch, 2010).

Figure 3.2 Second Generation CHAT Framework.

Figure 3.3 Third generation CHAT Framework
Third generation activity theory (Figure 3.3) (Engeström & Glăveanu, 2012; Engeström et al., 1999) allows researchers to place emphasis on internal tensions, or instability, in order to record growth and change. Engeström explains that the tensions do not only alter the subject of the activity system, the tensions change the environment itself (Engeström et al., 1999). Tensions are inherent in activity systems, but they are brought about by specific activities. They are brought about by contradictions in an activity system both between nodes and within a node. Activity theory can also allow a researcher to help make meaning from real-world data in an organized and analytical way (Yamagata-Lynch, 2010). Third generation activity theory differs from previous versions of activity theory through the acknowledgment of the surrounding activity systems and the impact and influence those systems have on a central system.

This research is in part informed by third generation activity theory, in that as I collected and analyzed the data for this project, I used activity theory as a lens for my relationship with the data. In this case, that meant that the activity under study was Chromebook use in the classroom. The large activity system was the school community within which the activity took place, but there were also smaller activity systems within the larger school activity system (e.g., Hebrew language classrooms or an Honors English class).

The basic unit of analysis for activity theory is an activity system. Within the activity system, there are activities that are comprised of actions. Activities are goal driven and are incremental steps toward the object of the activity system. Actions are comprised of operations. This is a system of parts that are all related to one shared goal—the object (Jonassen & Rohrer-Murphy, 1999; Postholm, 2014). There are also elements of the activity system that mediate these activities. These elements are the subject, the object, mediating artifacts, rules, community, and division of labor (Engeström et al., 1999). The subjects are the people involved in the
activity system. The object is the motivation of the subject’s activities (for example, in a classroom with the teacher as the subject, the object could be teaching students how to master adding fractions). Mediating artifacts are the physical and psychological tools that are involved in activities between the subject and the object. Community is the cultural group in which the system is a part, and rules are the explicit and tacit norms of the activity system. The division of labor “defines how tasks and responsibilities are shared among system participants as they engage in activity” (Anthony, 2012, p. 338). In Figure 3.4, there are examples of each element of the activity system. These are examples of what was explored in my own dissertation research.

Figure 3.4. Activity theory examples.
Because I was more interested in the process of what happens when technology is introduced in a *Bais Yaakov* school rather than only the setting itself, I employed what Charmaz (2006) describes as a *grounded theory ethnography*. According to Charmaz (2006), grounded theory ethnography “gives priority to the studies phenomenon or process—rather than to a description of a setting” (p.22). In a traditional ethnography, a researcher gathers all types of data about the unique context of the setting. Charmaz explained, “a potential problem with ethnographic studies is seeing data everywhere and nowhere, gathering everything and nothing” (p. 23). In a grounded theory ethnography, I focused on the implementation of Chromebooks within the school context. For example, if during data collection, I saw that many students were eating cream cheese sandwiches during lunch, I did not include this in my field notes. I recorded information that aligned with my research questions such as tools that teachers and students used for instructional purposes in the classroom. This observation, while interesting, was not related to my technology focus. A grounded theory ethnography helped to eliminate mountains of interesting but unconnected data at the end of a collection period. A grounded theory ethnography allowed me to analyze data as it was collected and I adjusted current practices based on the analysis. Charmaz also explained that this type of ethnography assist the researcher in focus, structure, and organization (2006).

Traditionally, grounded theory is rooted in objectivist epistemology (Glaser, 1978), and grounded theory relies on no prior theoretical underpinnings to the data. However, with Charmaz’s grounded theory ethnography, the epistemological foundations are constructivist (2006). Seaman contends that grounded theory and activity theory have “complimentary ambiguities” (2008, p. 4). What grounded theory lacks in prescription of contextual (read:
cultural) data, activity theory tackles (Seaman, 2008). Grounded theory provides explicit data methods that activity theory leaves vague (Seaman, 2008).

**Context**

*Bais Yaakov* schools were started in 1917 in Poland, but they gained traction in the United States in the mid-1960’s to mid-1980’s as the primary method for Orthodox girls’ schooling (Ginsparg, 2009). Prior to *Bais Yaakov* schools, Jewish teenage girls did not have formal religious education, as it was deemed inappropriate. The *Bais Yaakov* movement in Europe did not survive the Holocaust, but the *Bais Yaakov* movement flourished in the United States after World War II, and by 1963, there were 5,000 students enrolled in U.S. *Bais Yaakov* schools (Ginsparg, 2009).

Orthodoxy is the most observant form of Judaism, and *Bais Yaakov* schools reflect this Orthodox ideology (Ginsparg, 2009). Orthodox Jews believe that God wrote and gave the written and oral Torah to Jews at Mount Sinai in a divine revelation. The written Torah contains Jewish law, or *halacha*, that the oral Torah helps to explain. The oral Torah was passed down orally until it was written down as the Talmud by Jewish rabbis around the 5th century C.E. (Ginsparg, 2009). Because Orthodox Jews acknowledge the Sabbath, they generally live within walking distance to a synagogue, thus creating a physical community in the area around a synagogue (Ginsparg, 2009). Within Orthodoxy, there are multiple religious sects that range in level of stringency. Some sects are more modern than others, which may be reflected in more lenient dress (e.g. shorter skirts and short sleeves for women) and more participation with the surrounding non-Jewish community (e.g. work and school outside the Jewish community).

Founded in 1996, the Schachter School was a 9-12 *Bais Yaakov* school for girls in an urban area. While the school was not officially affiliated with the Orthodox synagogue in the
community, the Schachter School shared a parking lot and a street entrance with the synagogue. Many girls who attended the school lived in the community surrounding it and walked to school. Other girls who attended lived in a neighboring Orthodox community about ten miles away. About 10% of the students in the school were boarders from other cities in the United States and abroad. These boarders lived with members of the Orthodox community immediately surrounding the synagogue and the school. Teachers for the Schachter School came from both Orthodox and non-Orthodox backgrounds. Some teachers were not Jewish and practiced other faiths, and some teachers were Jewish but not Orthodox. During the 2014-2015 school year, there were 26 teachers, and there were 44 students. However, only two teachers (one math teacher and the language arts teacher) were considered full-time. Most teachers held other jobs or responsibilities and taught only one or two classes a week.

The school employed a dual-curriculum. This means that half of the day students attended Judaic subject courses such as Chumash (the first five books of the Torah, or Bible) and the other half of the day was available for secular subjects like math and science. This dual-curriculum produced the need for students to be in classes for 44.5 hours each week. For comparison, students in public high schools in the same area attended class 35 hours each week.

Prior to 2014, the Schachter School did not have wireless Internet access or regular computer access for teachers or students. However, there were eight computer units in the media center that were connected to the Internet for a few hours each day, and there was one laptop and one projector for the whole school that teachers could check out for instructional purposes. In 2014, the school constructed a new building and chose to equip the building with wireless Internet capabilities. Alleman, Holly, and Costello (2013) found that moving to a new building could be a strategy to help teachers rethink how they use technology in teaching and learning.
With moving to a new space and deciding to adopt wireless technologies as a catalyst for change, the school’s administration decided to adopt some sort of wireless device for students and teachers to use during the school day. The administrators spoke to educational technology consultants at a nearby university to discuss their options for wireless devices. After a few online discussions (using Google Hangouts), the administrators decided to adopt Google Chromebooks. Together with the consultant and the financial administrator of the school, the principal and the assistant principal decided on a ratio of one computer to each student, plus ten Chromebooks for shared teacher use to be implemented in the 2014-2015 school year.

**Exploratory Data Collection**

I collected data from July of 2014 until June of 2015 for initial exploratory data to determine whether or not the context would be a viable option for my dissertation research. I had access to this school community because a friend who worked at the school heard that the school was contemplating adopting laptops for the 2014-2015 school year. My friend invited me to meet with the principal and assistant principal, and they agreed to let me collect data in exchange for helping teachers periodically throughout the school year with challenges with the new technology. During this initial exploratory phase, I interviewed two administrators, two students, and three teachers. I also observed classes and professional development, and aided teachers in small technology tasks such as e-mail, gradebook set-up, and online attendance.

Ethnography, by definition, includes an extended period of time in the field (Jeffrey & Troman, 2004; Spradley, 1979). Including the data from initial exploratory collection, I collected data over the course of two years. I was granted IRB approval for my initial data collection, and for the purposes of the dissertation, I amended the IRB.
Participant Recruitment.

My participants are teachers, administrators, students, and parents in the Schachter School community. In qualitative research, the number of participants is not as important as the breadth of information that I learn from these participants. Instead of sample size, sample adequacy is critical (Bowen, 2008).

In September of 2014, I recruited teacher participants during the initial exploratory data collection by giving all faculty consent forms through their school mailboxes. Attached to the consent form, I provided a letter explaining that if teachers wanted to participate, they could return the consent form to a receptacle in the teachers’ lounge and I would contact them via school e-mail to find a mutually agreeable time to meet for an interview. Three teachers responded, and I interviewed all three. I repeated this recruitment method in December of 2015. The second time, four teachers responded, and I contacted them through e-mail to find an appropriate time for the interview. Three of the teachers agreed to meet, and the fourth teacher apologized because she did not have time to be interviewed. While I was on campus, another teacher approached me and asked to be a part of the project. I agreed, and I interviewed the teacher that day.

To recruit students during the initial data collection in December of 2014, I gave all students a packet with an introductory letter, a parental assent form, and a student consent form. If a student wanted to participate, and if her parents approved, the student brought back the form and put it in the receptacle in the teachers’ lounge. I contacted the students who returned the form via school e-mail to find a time when the student would be able to meet for an interview. Three students (out of 44 students) brought back their consent and assent forms, but I only
interviewed two students. The third student did not respond back to my e-mail regarding a time to meet for an interview.

To recruit students and parents in December of 2015, I created packets that included an introductory letter to students and parents, a parental assent form (for their daughters), a student consent form, a parent consent form, and a stamped-envelope with my printed home address on it for form return. I gave the packets to the school secretary, and she put the packets in each of the student’s boxes. From this method of recruitment, three students mailed back their appropriate forms, and four parents, one of who is also the school’s technology administrator, responded. However, only two students and two parents responded to interview e-mails. I sent a follow up e-mail, but I did not get any responses back.

Both administrators of the school were asked in-person and individually if they would like to aid in my research study by participating in an interview during the initial exploratory round of data collection in September of 2014. They both agreed verbally, and I organized a time with them via their school e-mail address to interview them individually. Before the interview, each signed a consent form.

Throughout the project, I interviewed 15 participants. Two administrators, one parent, one parent who was also a teacher, four students, and seven teachers participated in interviews from September of 2014 to March of 2016. Further information about the participants in this study is described in Table 2.

**Researcher Background and Role**

As the researcher, it is important to note my own subjectivities throughout the process of data collection and data analysis. I am Jewish, and I was raised “traditionally” Jewish. Religion helps to create my belief system, and with Judaism, there are behaviors that a Jew might do to
observe the religion. I participate in many of these physical mitzvot (commandments) such as Kashrut (keeping Kosher) and Shomer Shabbat (keeping the Sabbath). My family and I celebrate Jewish holidays and the Sabbath by refraining from outside work, driving a car, and using electronics.

For me, my religion is about tradition. I participate because my family participates, and my relatives before me participated. We attend a Modern Orthodox synagogue in the same neighborhood where the Schachter School is located. However, most of the students at the Schachter School attend the Ultra-Orthodox synagogue in the community.

Before beginning my PhD program, I was a classroom teacher. I joined Teach For America after graduating in 2006, and I taught high school special education in a southern rural area of the United States. After that, I taught 7th grade language arts in a large urban school district and 4th grade general studies in a Jewish day school. “Good education” to me is student-centered, teacher-coached, and authentic. I am impressed with curriculum that allows students to be critical consumers of academic content and authentic creators of research and dialogue.

I am both an insider and an outsider at this research site. I am an insider because I am an observant Jew. I understand that the school has a different calendar than a public secular school due to the Jewish calendar, and the school does not have a traditional lunchroom in order to make obeying religious laws of Kashrut easier and more affordable. Thus, the students bring lunches from home. I also understand that there is a dress code that relates to modesty. When I went to the school, I wore a skirt that covers my knees and a shirt that covers my elbows. I also might have worn sandals or shoes without socks. However, the rest of the faculty (including the non-Jews and the non-Orthodox Jews), wore long skirts, the long sleeve shirts, but they also took care to cover their collarbones and wear socks or stockings.
I am an insider because I sent my son to the Orthodox synagogue’s preschool for the 2015-2016 school year. Many families associated with the Schachter School send their children and grandchildren to this preschool. I am an outsider because I am not as religious as the women in the school. I was educated in secular elementary, middle, and high schools, and I attended a secular university. I grew up in a community where I was the only Jew, and I work with non-Jews on a daily basis. Many of these women have only lived in religious Jewish communities. As an outsider, I did not gain rapport as well with my participants as someone who is an insider might have. For example, “small talk” about nearby restaurants was not appropriate because the restaurant may not be Kosher and the participant would not have a shared experience!

To aid in my own reflexivity, I maintained a researcher’s journal to log my own feelings and experiences. If I was unable to write, I audio recorded my feelings. The researcher’s journal was an important tool for this research study because there were some decisions that the school administration made with which I personally disagreed. For example, as an instructional technology educator, I believe that students should have widespread access to the Internet, and they should be explicitly taught digital citizenship and digital literacy skills. Students should have an opportunity to learn how to make educated decisions about the media they consume. Curriculum, whether it is formal or informal, can help them shape those educated decisions. The assistant principal told me that they want students to make thoughtful decisions about their media consumption after graduation, but they did not feel it was necessary to create digital literacy experiences for the students during their time in high school. From my viewpoint, especially since the community was so fearful of the Internet, this was like pushing a skydiver out of an airplane without hearing the safety spiel and practicing with the parachute equipment.
Without this reflexivity journal, I would not have had an outlet to record these feelings or to check my own beliefs regarding religion and technology integration. I made a conscious decision throughout this dissertation to share the voices and viewpoints of my participants, instead of my own. Many of the comments and stories I recorded I disagreed with at a visceral level, either because of my own beliefs about education, Judaism, or women’s roles in education and/or Judaism. I am fortunate that I have options for alternative venues to share my own beliefs on these topics. However, for the purposes of this dissertation, I have elected to remove them from my analysis.

**Data Collection**

Data collection for this research project started with initial data collection in the Fall of 2014. I continued to collect data until March of 2016.

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Collection</th>
</tr>
</thead>
</table>
| What happens during the first years of 1:1 computing when a Bais Yaakov school adopts Chromebooks? | Interviews  
Participant observation |
| How do stakeholders (students, teachers, parents and administrators) at a Bais Yaakov school approach teaching and learning with technology during the first years of Chromebook adoption? | Interviews  
Participant observation |
| Why do they approach teaching and learning with technology the way they do?        | Interviews                        |
| How do religion and culture influence the use of technology during the first years of implementation of Chromebook technology? | Interviews  
Participant observation |

Table 1. Research question and data collection.

**Semi-structured ethnographic interviews.**

I used semi-structured ethnographic interviews in this research (Roulston, 2010). Roulston explained that ethnographic interviews are often used as a catch-all for qualitative interviews. However, Spradley’s (1979) ethnographic interviews are generally conversational and an interviewer’s questions can fit into one of three categories: descriptive, structural, or
contrast questions. Ethnographic interviews begin with open-ended descriptive questions. After asking participants descriptive questions, the researcher can further qualify the information by asking structural and contrast questions (Spradley, 1979). This aligns with the grounded theory ethnography as I collected data and analyzed it concurrently.

For interview data, I recorded the interviews using two different devices in case one device did not work. I took the recording, uploaded it digitally to my computer, and I transcribed the interviews myself. During the transcription process, I removed any indicators of participant or research site identity and saved the file in a password protected folder on my laptop. I also backed up this folder on my password protected Dropbox and an external hard drive.

Table 2 describes the participants, their role, and the date of the interviews.

Table 2. Interview data

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Time of interview</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mia</td>
<td>9/17/14</td>
<td>14:27</td>
<td>Teacher</td>
</tr>
<tr>
<td>Lily</td>
<td>1/27/15</td>
<td>12:31</td>
<td>Student</td>
</tr>
<tr>
<td>Julian</td>
<td>2/3/15</td>
<td>1:27:26</td>
<td>Administration</td>
</tr>
<tr>
<td>Desiree</td>
<td>2/5/15</td>
<td>10:08</td>
<td>Student</td>
</tr>
<tr>
<td>Diamond</td>
<td>2/10/15</td>
<td>12:51</td>
<td>Teacher</td>
</tr>
<tr>
<td>Sarah</td>
<td>2/23/15</td>
<td>47:50</td>
<td>Teacher</td>
</tr>
<tr>
<td>Marianne</td>
<td>2/24/15</td>
<td>47:50</td>
<td>Administration</td>
</tr>
<tr>
<td>Kevin</td>
<td>1/8/16</td>
<td>41:02</td>
<td>Parent/Teacher</td>
</tr>
<tr>
<td>Molly</td>
<td>1/12/16</td>
<td>18:44</td>
<td>Student</td>
</tr>
<tr>
<td>Amy</td>
<td>1/13/16</td>
<td>20:23</td>
<td>Student</td>
</tr>
<tr>
<td>Bob</td>
<td>1/21/16</td>
<td>52:06</td>
<td>Teacher</td>
</tr>
<tr>
<td>Jane*</td>
<td>1/21/16</td>
<td>~50:00</td>
<td>Teacher</td>
</tr>
<tr>
<td>Bette</td>
<td>1/27/16</td>
<td>30:43</td>
<td>Teacher</td>
</tr>
<tr>
<td>Koby</td>
<td>1/28/16</td>
<td>41:02</td>
<td>Teacher</td>
</tr>
<tr>
<td>Penny</td>
<td>3/15/16</td>
<td>14:44</td>
<td>Parent</td>
</tr>
</tbody>
</table>

*Jane’s interview recording did not work. Immediately upon leaving the interview, I typed up notes of the interview and sent them to Jane for approval. Those notes were analyzed as if they were a transcribed interview.

Participant observation.
Spradley (1980) developed a spectrum of researcher participation ranging from nonparticipation, where a researcher would learn information about a cultural group from books, television shows, or pictures, to complete participation, where a researcher becomes a part of the group that he or she is studying. For this study, I was an active participant. This means that I participated as a regular member of the community to the best of my ability. I spoke freely to students and teachers when I observed during the school day. However, I did not disrupt the teacher’s lesson to interject or disrupt a student who is working to ask a question.

During the exploratory stage of my study, I took jot notes (DeWalt & DeWalt, 2010) by hand in a notebook, and then when I left the research site, I expanded on those notes in a typed file within Google Docs. However, I felt that this was not the best method of taking notes because I would sometimes delay expanding my jot notes by a few hours or even a whole day, possibly leaving out important details. To eliminate this issue, I typed field notes during the observation, when it seemed appropriate. My notes were more complete, and I saved time.

I avoided “going native” by limiting the time that I was in the school. “Going native” is “[when a researcher] embrace[s] a new setting to the extent that they adopt it in place of their original one” DeWalt and DeWalt (2010, p. 73). Below, Table 3 described my week of formal participant observation. While I visited the school on multiple occasions throughout the two years of my study, I chose to collect formal observation data during one week towards the end of my project. I spent 16 hours observing during this week. By the end of my data collection, I was familiar with the school, the students, and the community. This allowed me to focus on activity in the classrooms for activity systems analysis.

During the week of February 8-12, 2016, I sat in classrooms and maintained field notes during over 16 hours of observations. According to DeWalt and DeWalt, “observation is not
data unless it is recorded; and your brain is a poor recording device” (2010). I used my computer to take field notes, which are expanded notes about my particular observations during that time and space (DeWalt & DeWalt, 2010).

Table 3. Spring 2016 Observation Schedule

<table>
<thead>
<tr>
<th>Observation schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
</tr>
<tr>
<td>8:37- 9:22</td>
</tr>
<tr>
<td>9:23- 10:08</td>
</tr>
<tr>
<td>10:18- 11:03</td>
</tr>
<tr>
<td>11:05- 11:50</td>
</tr>
<tr>
<td>11:52- 12:37</td>
</tr>
</tbody>
</table>

During my observations, I looked specifically for actions between elements within the classroom activity systems. For example, I recorded in my field notes ways in which teachers and students (subjects) use technology (mediating artifacts). I also used these observations to triangulate the self-reported data from teachers and students in interviews (Anthony, 2012; Hew & Brush, 2007).

I also collected artifacts during the school year that pertain to my research questions. To collect artifact and document data, I tried to obtain a paper copy of the artifact if possible, and if not, I took a picture of the artifact and saved it to a password protected folder on my laptop with
a copy of the file in my password protected Dropbox account. Altogether, I analyzed over eight hours of interview data and sixteen hours of field note data.

**Data Analysis Procedures**

Ethnographic data analysis according to Spradley is, “the search for the parts of a culture and their relationships as conceptualized by informants” (1979, p. 93). While I did not search explicitly and solely for all of “the parts of the culture” within the research context, I was interested in how Chromebook use is impacted by the culture of the school. I did not use traditional ethnographic methods such as domain analysis or taxonomic analysis (Spradley, 1979). Instead of traditional ethnographic data analysis, my analysis for this study was informed by grounded theory and activity theory. I used thematic analysis. In order to focus and organize my data collection and analysis, I collected data in batches, and I analyzed those batches while I collected the next batch of data (see Figure 3.5). My data analysis helped to inform the extent of data I collected in the next batch.

I began my data analysis process with grounded theory coding (Charmaz, 2006). Grounded theory coding focuses on activity and process, and there are three phases of this type of analysis: initial coding, focused coding, and axial coding (Charmaz, 2006). I continued the data analysis process with memo writing (Charmaz, 2006). With each batch of data, I repeated this process. To stay organized, I used one codebook throughout the whole project, refining definitions as I analyze each piece of data. I saved each version of the codebook according to the date it was used, so I could chronicle the evolution of my coding behaviors. I used Dedoose, an online computer assisted qualitative data analysis software (CAQDAS) to help manage my data and analysis.
Initial coding
- Line-by-line coding
- Naming codes with gerunds
- Begin codebook development

Focused and axial coding
- Code larger chunks of data
- Creating a hierarchy of codes and their relationships to each other
- Visual representation using Popplet or Mind Meister

Memo writing
- Move from codes to categories
- Apply activity theory to data

Constant comparative analysis, refining codebook, using Dedoose

Figure 3.5. Data analysis procedures.

**Initial coding.**

During the initial coding stage, I used a line-by-line coding process. According to Charmaz, a line-by-line process helps the researcher view the data in new way, allowing for new meanings and different perspectives to arrive from the close analysis of short phrases and words (2006). I used Charmaz’s procedure of looking for activity in the interview and name codes with gerunds instead of with nouns (2006). Charmaz explains,

Think of the difference in imagery between the following gerunds and their noun forms: describing versus description, stating versus statement, and leading versus leader. We gain a strong sense of action and sequence with gerunds. The nouns then turn these actions into topics. Staying close to the data and, when possible, starting from the words
and actions of your respondents, preserves the fluidity of their experience and gives you new ways of looking at it. (2006, p. 49)

I began to develop a codebook during the initial coding stage. Each code was listed in the codebook with “(a) a name, (b) a description of what I mean by that name, (c) examples, and (d) decision rules” (Schreier, 2012, p. 95). At this stage, I used Strauss and Corbin’s (1998) constant comparative analysis. As I coded a new phrase, I looked to see if older codes matched the meaning of the definition I gave the new code. I condensed codes, created stricter definitions, and started tightening up my initial codes into definable and meaningful descriptions of the data. I coded the fifteen interviews using this process and at the end of the process, there were 101 codes. Appendix A includes those initial codes.
Focused and axial coding.

Focused coding and axial coding occurred together. Focused coding is using the most frequent or substantial codes from initial coding to code larger chunks of data (Charmaz, 2006). I determined the codes that are most reflective of the data, and I recoded all of the data using those codes.

I created axial codes (Strauss & Corbin, 1998). Axial codes answer the questions, “when, where, why, who, how, and with what consequences” (Charmaz, p. 60). I organized pre-existing codes (from the initial codes and the focused codes) by their relationships to each other into a hierarchy with multiple levels as the data suggests. Axial coding helped to refine codes created in earlier stages. I used an online cognitive mapping tool, Mind Meister, to aid in this task. Figure 3.3 shows the organization of my axial coding product.
Figure 3.5. Axial Codes.
Memo Writing

After creating axial codes and focused codes, I transitioned from codes to categories by writing memos (Charmaz, 2006). In early memos, guiding questions I attempted to answer are:

- What process is at issue here?
- Under which conditions does this process develop?
- How do(es) the research participant(s) think, feel, and act while involved in this process?
- When, why, and how does the process change?
- What are the consequences of the process? (Charmaz, 2006, p. 81)

I created memos based on the seven main themes found in my data analysis: Feelings about technology/Chromebooks, Feelings about Teachers/Teaching, Feelings about Parents, Feelings about Students, Using the Chromebook, Describing the School Environment, and Access. I created Word documents with each of those headings, and I printed all of the coded data for each theme. After analyzing the data again, I recognized more patterns in the data, and I organized each theme into sub-themes.
Table 4. Themes and Subthemes from Memos

<table>
<thead>
<tr>
<th>Themes</th>
<th>Feelings about Technology</th>
<th>Using Chromebooks</th>
<th>Access</th>
<th>Feelings about Teachers</th>
<th>Feelings about Students</th>
<th>Describing the School</th>
<th>Feelings about Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subthemes</td>
<td></td>
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<td></td>
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<tr>
<td>Different levels of technology knowledge</td>
<td></td>
<td></td>
<td>Frequent access</td>
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<tr>
<td>Frustrated about Technology</td>
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<tr>
<td>Fear of Technology</td>
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<tr>
<td>Technology is not a synonym for success</td>
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<td>Affordances of Chromebooks</td>
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<td>October access</td>
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<tr>
<td>Limits of the Chromebooks</td>
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<td>October access</td>
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<td>Limits of Technology</td>
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<td>October access</td>
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</tr>
</tbody>
</table>
From the themes and subthemes in the memos, I organized the data in written form in the results section in this dissertation. I rearranged topics in order to more clearly answer the research questions.

**Activity Systems Analysis**

Activity theory is commonly applied in designing new learning experiences (Jonassen & Rohrer-Murphy, 1999), but scholars have also applied activity theory in their research of classroom systems (e.g. Anthony, 2012; Divaharan & Ping, 2010; Fiedler, Mullen, & Finnegan, 2009; Larkin, 2011). However, these scholars have applied activity theory *differently* in their research methods. Barrett-Tatum (2015) explained that after initially using constant comparative analysis (Glaser, 1978) on her data, she codes the data again using a priori codes aligned with CHAT. Yamagata-Lynch (2010) explained her process as activity theory qualitative research. At the final coding stage (after constant comparative analysis), she asks herself the following questions:

- What are the key activities related to this study that are in the data set?
- What is the activity setting in which these activities are situated?
- Who are the subjects of these activities?
- Do different subjects participating in the same activity view the activity and the object differently? If yes, why?
- What tools, rules, community, and division of labor are involved in these activities?
- What systemic contradictions are bringing tensions into these activities?
- What are the outcomes of these activities?
- What historical relationship does one activity have with another?
• How does one activity interact with another? (Yamagata-Lynch, 2010, p. 75)

Yamagata-Lynch continued to explain that she drafts models of activity systems using the information from this last stage of coding. These drafts continue to be drafts until she writes “thick description of the data in narrative format” (Yamagata-Lynch, 2010, p. 75). I used Yamagata-Lynch’s methods as a guideline for my data analysis.

I took my visual representation of my axial codes (as seen in Figure 3.5), and I made notes regarding to what elements of activity theory (subject, object, mediating artifacts, community, rules, and division of labor) some codes aligned. While not all of my codes aligned to activity theory perfectly, it helped to generate different activity theory systems that I could illustrate using the data. After making notes on my axial codes, I drafted activity systems using PowerPoint. I used Engeström’s third-generation activity theory that acknowledges tensions and contradictions in the system (1999). To begin the drafting process, I created four activity system illustrations with administrators, teachers, and students, and parents as the four different subjects. I used the visual representation of the axial codes as well as raw field notes data to label the other parts of the activity system. The draft with teachers as the subject was difficult because each teacher uses different tools and come with different beliefs about teaching and learning. I created three more (eight in total) different activity systems to represent unique participant perspectives and contexts (see Figure 3.6).
Then, I wrote thick narrative descriptions of those systems. From this step, I continued to reduce the systems until the activities were clear and concise. Ultimately, I created two activity systems: one central system and one supporting system.
Credibility and Consistency

For credibility and consistency, during data collection, I kept a researcher journal where I debriefed about my encounters during that day. In this journal, I kept my personal thoughts concerning the research as well as what I experience at The Schachter School. I also recorded myself discussing my feelings and reactions to experiences at The Schachter School on the way home in the car. I have transcribed those notes as well.

I am referring to this strategy as reflexivity, and according to Berger (2015), reflexivity is, “the process of a continual internal dialogue and critical self-evaluation of researcher’s positionality as well as active acknowledgement and explicit recognition that this position may affect the research process and outcome” (p. 220). I addressed my subjectivities and acknowledge my emotional responses to the context in this journal.

Data triangulation is a technique that I used to strengthen the validity of my research (Yin, 2014). I used multiple data points (interviews from multiple perspectives, observation, and document data) to help answer my research questions. I also examined my data through two different theoretical lenses (grounded theory ethnography and activity theory).

I provided transcripts of participant interviews to the interviewed participants, and I shared initial findings to the administration on July 6, 2016 to determine the trustworthiness of my analysis (Roulston, 2010). The member checking with the administrators was helpful. They shared that since my interviews and observations, one teacher started using the Chromebooks more regularly in a Judaics classroom, and the new assistant principal for the 2016-2017 school year was technology savvy and excited
about technology integration. They confirmed my initial findings as an appropriate snapshot of the school during the time that the data was collected.

**Ethical Considerations**

It is very important to me to be ethical in my research. I obtained approval from the Institutional Review Board (IRB) on my campus. I do not want to exploit my research participants in any way, and I worked to avoid “othering” this population. In exchange for my use of the school as a research site, I created some professional development regarding the Chromebooks, and I presented this professional development session prior to the beginning of the 2015-2016 school year.

**Limitations and Delimitations**

A long standing critique of qualitative research is the level of trustworthiness of the research (Riessman, 2008). The lack of method standardization within qualitative research makes it difficult to create a one-size-fits-all rubric for research trustworthiness. This is one limitation of my research.

The interview method I used another limitation of this research. There is some research that suggests that there is a disconnect between what participants say in an interview and what they do in real life (Roulston, 2010). During the interview, participants also may be worried about other activities and give limited answers in order to devote more time to another task. I addressed this issue by having the teacher come up with the time and place most conducive for them to be interviewed. Teachers selected their classrooms. One parent invited me to her office, where she worked. Students chose to me on campus in a room that is normally empty, a meeting room near the office. I put in an extended time in the field in order to gain rapport with participants.
A delimitation of this research is the setting and the data collection time period. I selected this particular setting, and I limited myself to a year and a half of data collection. This particular setting was unique, and I was offered access to study it.

**Summary**

This chapter explains that this study is a grounded theory ethnography that utilized grounded theory and activity theory as frameworks for ongoing data analysis. I collected over 8 hours of interview data from 15 participants: one parent, one parent who was also a teacher, four students, seven teachers, and two administrators. I was a participant observer in the school building throughout my data collection period, and observed over 16 hours of instructional time. I used my exploratory data in addition to my dissertation data, and together, collected data from September of 2014 until March of 2016. I analyzed my data as I collected it using Dedoose, a CAQDAS.
Chapter 4: Thematic Analysis

The purpose of this study was to describe what happens during the first years of 1:1 computing at a Bais Yaakov school. The main research question was: What happens during the first years of 1:1 computing when a Bais Yaakov school adopts Chromebooks? The sub-questions were:

1. How do stakeholders (students, teachers, parents and administrators) at a Bais Yaakov school approach teaching and learning with technology during the first years of Chromebook adoption?

2. Why do they approach teaching and learning with technology the way they do?

3. How do religion and culture influence the use of technology?

The first section of this chapter helps to explain the school context highlighting the Orthodox Jewish background. It is important to document characteristics of the setting because the context influences the technology use, as described in later sections of this chapter. In the next section, I illustrate the participants’ technology skills and expertise, the frequency of Chromebook use and the types of Chromebook use. User skills and expertise characterized the ways in which the Chromebooks were used. I then describe the other factors that influenced instructional and learning decisions such as the costs of technology and participants’ opinions about technology including frustration and fear. In the last section of this chapter, I describe the structures that are in place that limit access to the Internet and how stakeholders perceive them.
Context: “This is hard, but we do hard”

In the fall of 2014, SHS moved from their old campus made up of multiple trailers linked together with covered walkways to their new campus, a newly constructed, two-story building about ½ a mile down the road. This move created a permanent home for the school community. The school was founded in 1996 by the principal, the wife of the local Orthodox rabbi.

The new school building, while amidst finishing touches, opened in the fall of 2014 for students. It was a secure building with key card access only. At the main entrance, there was a button and a camera to call the office for entry. The building housed offices, a teacher’s lounge, a large room that is used as a place for students to eat (there is no kitchen), and a multipurpose room on the main floor. On the second story, there were 10 classrooms and a library. In the library were books and two desktop computers that were unconnected to the Internet but available for student use. Two of the classrooms were science labs, and the others were general classrooms. In the science labs, there were tables where students sat in pairs and a teacher desk. There were eye washing stations, sinks, microscopes, and science materials in both science lab classrooms. In the general classrooms, there were student desks, a teacher desk, and a whiteboard. In most classrooms, desks were arranged in rows, but sometimes teachers elected to have the desks moved into a circle or semi-circle. One general classroom had a SMARTBoard. The school received the SMARTBoard as part of a Jewish Technology grant through the Jewish Federation. The Chromebooks were housed in a laptop cart on the second floor of the school building (see Figure 4.1). They were unlocked during the school day and students can retrieve the laptops whenever they need them.
School hours were from 8AM until 5:30PM Monday-Wednesday. On Thursday, the last class concluded at 4:44PM, and on Fridays, classes ended at 3:00PM. Due to scheduling, teacher availability, and classroom space, students’ class schedules varied. A student could have had class until 4PM, or a student could have had more than one “free period” during the middle of the school day. There were eleven different class periods plus two davening (praying) periods every day. The entire school had davening together in a multipurpose room on the first floor each morning from 8:00- 8:35AM while a teacher lead the davening and took attendance using the Chromebook. At 3:00PM each day, there was a ten-minute break for mincha (afternoon prayer). Each class period was
45 minutes. There were two minutes between each class for transition, and there was a ten-minute morning break.

As a self-described religious private school, Judaism played a pivotal role in the school environment. Jewish holidays were observed. This meant that during the fall, teachers and students were excused for almost two weeks intermittently for the Jewish high holidays of Rosh Hashanah, Yom Kippur, and Sukkot. In addition to Jewish holiday breaks, SHS had “traditional” school year breaks in the winter and the summer. This caused the school calendar to extend past the public school calendars in the area, and graduation was generally in mid-June, almost three weeks after the neighborhood public school’s graduation.

Religion impacted the school calendar, classroom content, access to the Internet, daily schedules, dress code, content for the school play, and even fundraising projects. Every year, the senior class raised funds for their class trip. In the spring of 2016, the class of 2017 sold flower bouquets for the Jewish holiday of Shavuot (see Figure 4.2). The profits from this fundraiser helped the students collect money for their trip.
Figure 4.2. Shavuous Flower Flyer.

This was the flyer for the junior class fundraiser for their senior trip. These fundraisers were created and organized by the students for the community. Even the fundraising opportunities for the students were connected to Judaism.

The calendar was not the only thing that was aligned to Jewish religion and culture. Course content also aligns to Jewish Ultra-Orthodox values and beliefs. Participants described ways in which they had to alter course content in order to align with the school standards. Bob, the History teacher, shared multiple examples of how religion impacted his classroom practice; “I cannot assign 1984 for example…I have had parents say that we should not teach them about the Greek gods because it is wrong” (Interview, January 21, 2016). Bob admitted that he often omits content that he thinks might be controversial. When controversial topics cannot be avoided (such as the role of Christianity in World History), the school provided assistance by sending in a rabbi to talk to the students before the unit.

I witnessed many references to religion in the classrooms during my observations. For example, when discussing chemical mixtures and solutions in a Chemistry class, a student explained that cholent (a traditional stew served on Shabbat lunch) is a mixture because of the chunks of potato and meat that can be identified when it is served (Field notes, February 9, 2016). In another example, students shared recipes for Shabbat with each other and with the instructor during a transition from one period to the next. On Fridays, the typical “farewell” was “Shabbat Shalom” or “Gut Shabbos.”

Students were allowed to leave campus during their free periods. Some students walked home for lunch or to a local store for ice cream and sandwiches. Others visited
the preschool next door to play with the preschool children and visit their mothers who are teachers at the preschool. Teachers were also allowed to enter and exit the school building during the day. Teachers were only required to be on campus during the times that they were scheduled to teach. Many teachers arrived at school earlier than their scheduled classes in order to make copies and check their email.

There were 69 different courses that a student can sign up for at SHS. They are listed in full in Appendix B. Courses ranged from Math courses like Algebra and Geometry, to Social Studies courses like Consumer Economics and American History, to Judaic courses like Chumash and Navi. Courses with an A or a B behind its name denoted that that class is ability grouped. Honors also denoted ability grouping. Students in the 11th grade had the option of taking Chumash (Bible) in either English or Ivrit (Hebrew). The Senior Internship courses were times set aside for students who were taking online classes through a local college. Since there were so many courses, the class sizes were small. The largest class was 20 students. The smallest class was four students.

Besides teaching secular subjects and Judaic subjects, the school also maintained a character education program. A parent explained it to me:

They are not just going to school to learn math or chumash or whatever. The school really cares about how the girls feel about themselves are people. And how they are developing and growing and their self-esteem and in the program, they will focus on different character traits and in a very creative way have the girls become introspective about it and learn how to think about it and incorporate it into their lives in a mature way. My girls love it (Penny, Interview, March 5, 2016).
At a meeting at the beginning of the school year, the principal described the character education program as a pillar of the school and just as important as Judaic studies or secular studies. The principal shared a story of how one student left about a month into the school year in 2014 because she could not take the character-building component of the curriculum. It was too hard for her, and the student wanted to spend more time focusing on her grades. The principal told the staff, “This is hard, but we do hard. Long sleeves in the summer, no boys, limited TV (or no TV), and limited mall time” (Marianne, Observation, August 21, 2015). Throughout the year, the school body took trips, created decorations (see Figure 4.3), and participated in seminars for character education.

![Character Curriculum Example Materials](image)

Figure 4.3 Character Curriculum Example Materials

During winter finals week of 2016, the second story of SHS was adorned with signs and floor decorations to help inspire students to do their best.

**School community.**
The school community at SHS consisted of teachers, administrators, students, parents, and members in the Orthodox Jewish community. The school had a school board that was made up of four officers and a group of trustees. At the time of my research, there were 48 students and 23 teachers. About 10 students each year were boarding students from around the United States and Mexico. Boarders lived with families in the Orthodox Jewish community during the school year. Teachers at SHS came from a variety of backgrounds. For some, teaching at SHS was their first experience teaching high school students. For others, teaching at SHS was their first experience teaching in a private school. For many non-Jewish teachers, teaching at SHS was their first experience teaching Jewish students.

Other teachers taught at multiple schools during the school day. “Mrs. Rosen (pseudonym) is fabulous, and we love her. But she also teaches 5th grade Judaic studies at [a neighboring school]. She comes over here to teach one class twice a week. She is available in one little tiny window of time. That’s it” (Julian, Interview, February 3, 2015). This was common for all teachers and administrators to be stretched between multiple jobs at different locations around the community. One teacher taught at a local junior college, one teacher trained dogs on the side, and another teacher held a full time job teaching in a different school and taught at SHS during his planning periods. For most teachers, teaching at SHS was a side job, and teaching at SHS was not the one source of income for an individual. During the 2014-2015 and 2015-2016 school years, only two teachers were considered full-time employees.

Administrators seemed to be “pulled in 100 different directions” (Bette, Interview, January 26, 2016), and some teachers had schedules that do not allow for a weekly or
monthly staff meeting. In the past, the administration would organize at least one faculty meeting a month that was open to whichever teachers were available. However, since the school community moved to the new building, administrators called for few faculty meetings. A new teacher wished there had been some sort of new teacher orientation or “Oh, so you are new to [SHS], This-Is-What-It-Is-Going-To-Be-Like class” (Bette, Interview, January 26, 2016). More regular communication between administration and staff, either through face-to-face meetings or online messaging, would have benefitted the school community as a whole.

Secular studies teachers did not have much contact with parents. For example, one teacher shared that she did not have “as much contact with them as I did in public school” (Bette, Interview, January 26, 2016). Another teacher explained that if there were a problem, the parent would contact the school, not the teacher directly. Bob, the History teacher, shared that in his over 10 years of working at the school, he had only talked to one parent on the phone. Other communication with parents had been filtered by and delivered to Bob by the school administrators.

On the other hand, Judaics teachers have constant parental contact because they live in the community. Koby, a math teacher, explained,

We have a very involved parent community. Very involved. And of course, all the Judaics teachers know everybody in the community. They are in the community. There is really no way to get away from that here. There is no escape. (Koby, Interview, January 21, 2016).

This description of the parental communication with Judaics teachers was a stark contrast to the parental communication with the secular studies teachers. Because the Judaics
teachers live and work in the same community, they are often forced to talk about work in social settings with their students’ parents.

Not all of the teachers at the school are observant Jews or a part of the observant Jewish community. Some teachers are willing to ask questions when they do not understand a Jewish topic. One teacher said of her Jewish co-workers, “Everybody is nice and helpful and… when I have a gentile [a non-Jewish person] question, they answer me” (Bette, Interview, January 26, 2016). Others err on the side of caution, “I err on the conservative side. So anything that I think could be on the borderline, I just get rid of [that questionable content]” (Bob, Interview, January 21, 2016). This teacher omitted content from his curriculum if he deemed it inappropriate by the school’s unwritten standards. For example, when Bob was teaching the students about the Boston Tea Party, he cropped an image to eliminate the shirtless men. He was not directed to crop this image, and he did not ask the administration if he needed to crop it. The teacher “err[’ed] on the conservative side” and self-censored his class content (Bob, Interview, January 21, 2016).

Students were aware that teachers may not understand the unique culture of the community. For example, during a class, two students were talking about a time when a student’s great grandmother came to visit the school. During the visit, a teacher told the great grandmother that she looked “hot.” The girls giggled about that and told the teacher that she should not say that to the great grandmother because the great grandmother was a rebbetzin (wife of a respected rabbi) (Field notes, February 11, 2016).

Pedagogy.
Overall, the pedagogy of the teachers was traditional. During my observations, classes were teacher-led and students took notes and answered questions that were prompted during the lecture. Particularly, in history, the teacher wrote notes on the board, students copied those notes, and then the teacher explained the notes with an interesting narrative. In the Judaic subjects, many of the classes were structured around a Hebrew text. Students read from a text out loud and the teacher explained or described what was just read. Students also translated the Hebrew text to English. In the math classes I observed, teachers led an introduction of new material and students worked through problems with teacher assistance. In Language Arts classes, the teacher and students discussed texts, and students took notes and participated in the discussion. In the science classes I observed, the teacher varied activities with some hands on experiments, online quizzes, and lecture. Teachers created assignments that were structured. One teacher said about research assignments, “They tend to be fairly structured. I cannot quite say, ‘Go find the answer to whatever question.’ It has to be more planned out than that” (Sarah, Interview, February, 23, 2015).

Behavior.

Student behavior was aligned to Jewish religion. For example, the dress code was in place to help students maintain Jewish principles of modesty. During a pre-planning meeting before the 2015-2016 school year, the principal shared new dress code violation slips with faculty. On these slips were lists of all the possible infractions. Teachers were to mark off the infraction and send the student and the slip to the front office for a consequence. For SHS, the infractions were the following: “(a) no shell; (b) shell too low; (c) no socks; (d) tight, tight, tight; (e) nail polish; (f) too many buttons open; (g)
tummy showing; (h) elbows showing; (i) hair loose; and (j) sweaters/sweatshirt” (Field Notes, August 21, 2015).

Some of these infractions were distinctive from public school dress code violations. For example, public schools allowed shoes without socks, nail polish and exposed elbows. There were no uniforms for the students. Sweaters and sweatshirts were allowed if they were SHS sweatshirts. A shell is an undershirt meant to be worn under a more revealing shirt. With a shell, students could wear t-shirts or shirts with a v-neck. During my observations, both students and staff followed the dress code. Students wore closed-toe canvas shoes with socks and ankle length cotton skirts. Tops varied between SHS sweatshirts and button down shirts with shells underneath. The female teachers all wore skirts and panty hose. The male teachers wore khaki pants and button downs or polo shirts. The dress code was in place to remind students to respect themselves.

The ways in which the students showed respect to teachers and elders were aligned to how congregants show respect for a rabbi. As a teacher walks into the room, students physically rose to show respect for the entry of the adult. In Judaism, you rise to show respect to people and to things. For example, during a weekly Shabbat service, congregants rise when the Torah is taken out of the ark. This behavior shows a physical expression for respect to elders and to teachers. Students even stood up for me when I came into a room!

These rules, both explicit like the dress code and implicit like standing for a teacher’s entrance, provided an added layer of ritual to a typical school day. The values that these rules reinforced, such as modesty and respect to yourself and others, were an
important part of the identity of SHS as a Bais Yaakov school. To an outside observer, these nuances of difference between a public school and SHS may seem negligible. After all, what school does not have traditions and rules? This school’s culture was reliant on these rules. Like Orthodox Judaism, a religion that is based on rules and laws, the identity of SHS was dependent on its rules.

**Technology: Nothing to everything overnight.**

The technology set-up in the trailers, the “old campus”, consisted of one computer lab in the library with 12 computers that varied in speed and connectivity and a laptop and projector on a cart that could travel from room to room. One student explained, “In the old building we used to have… a computer lab with 12 old computers, so I barely went in there… it was very limited” (Molly, Interview, January 12, 2016).

In the old building, an off-campus third party maintained security for those student computers, and during some hours the computers had no access to the Internet and during other hours there was more open access on the Internet. Some students at SHS took online classes from a local college in order to get college credits. These students were given a “free” period to work on their coursework. The computers filters were set up to be “open” on specific computer units during the specific periods in which the students were assigned to work on their online college coursework. However, the filters did not always work, and students were either given too much unmonitored access or not enough access. For example, a student might have a period designated to work on her college online class from 2:30PM- 3:30PM. On a specific computer unit, this student would have open Internet access with no filters. However, the remote system may not
work and a different computer unit in the lab would have open access and the student’s assigned computer would be blocked from all website access.

In the old building, during the school day, there were class periods when the computer lab was open, and students could come in to work on assignments. A teacher was scheduled to monitor the students during that class period. If a teacher was not at school, there may not have been a substitute. Thus, the students were left unmonitored and were able to access restricted sites on the Internet.

During the building of the new campus, the builder asked the school’s administration if wireless Internet access should be included in the plans. The answer was yes. Including the wireless Internet infrastructure into the blueprint for the building was instrumental to the adoption of Chromebooks. The principal shared her goal for the school and provided reasoning for adopting Chromebooks. She explained, “I want this to be a school of excellence. And in this century, if you do not have good technology, you are not a school of excellence” (Marianne, Interview, February 24, 2015).

In the new building, students have access to a Chromebook, a laptop powered by the Google Chrome operating system. A Chromebook is assigned to each student for the year, and it is housed in a laptop cart on the second floor of the school. There are eight Chromebooks that teachers can use to take attendance, import grades, and create lessons. However, they are not assigned to particular teachers.

The Chromebooks arrived in late August of 2014 and were shared with teachers in September of 2014. Due to the school closures for the Jewish holidays of Rosh Hashana, Yom Kippur, and Sukkot, the Chromebooks were not introduced to students
until the end of October 2014. The administration wanted to wait until the high holidays were over, and students would be in school for an uninterrupted period of time.

Figure 4.4 shows the timeline of the introduction of Chromebooks. There were only two months between deciding to purchase the Chromebook and receiving them from the supplier. Large public school districts would be unable to quickly decide on the device, fund the technology project, and order the devices in such a short time span.

At the beginning of the 2014-2015 school year, the school organized training for teachers on the new Chromebooks. A trainer from a local university came to share innovative practices that can be used in the classroom with high school students. She visited the school twice. However, school staff provided negative feedback regarding the training. The content of the sessions was not appropriate for the teacher attendees. The assistant principal explained,

The person that came in from [Neighboring University] that was supposed to do those two days of in-service did not get us either. She did not understand that they really needed from… this is how you plug it in, this is how you turn it on, this is how you log in… she had no concept of how to troubleshoot for them when you pick up a different machine the next time and your username is not there…
um… she… was totally unfamiliar with the Chrome management systems so she
could not offer them any explanation with how things would work or not work…

(Julian, Interview, February 3, 2015).

The trainings were a point of contention for the assistant principal. Julian expressed that
the trainer did not understand the level of technology knowledge of the faculty or the
context of the school. The trainer shared apps and websites that were inappropriate for
the school’s context. Since getting a large percentage of the staff together during non-
instructional time is so difficult, Julian wished the training had been more helpful. Julian
felt that the faculty was “jaded” after that training (Julian, Interview, February 3, 2015).

A teacher agreed, “I think the faculty needs more training, I think we need the
right kind of training. I do not think we got the right kind of training. The people that
came in were teaching us stuff that is irrelevant” (Sarah, Interview, February 23, 2015).

Because the school context was unique, the content from the professional development
was seen as “irrelevant” (Sarah, February 23, 2015) and “over their heads” (Julian,
February 3, 2015). The teachers needed the basics—how to sign in, how to sign out, how
to access the grade book-- and they did not get that from the organized training at the

**Using technology: User expertise, frequency of use, variety of use**

To provide a thorough picture of the school setting, it is important to describe the
spectrum of teachers’ and students’ technology expertise. Following that section, I will
explore the frequency and variety of technology use. Teacher and student expertise are
aligned to the frequency and type of use of technology. In this section, expertise,
frequency, and type of use are explained in a narrative. Supplementary tables designed to illustrate technology use in classrooms are included at the end of this section.

**Expertise ranging from novice to “typical teenage girl.”**

Teachers are the front line of technology integration. They design lessons and make decisions on what tools to use or ignore in order to reach their goal of student mastery of content (Boschman, McKenney, & Voogt, 2014; Voogt, 2010). At SHS, teachers had the autonomy to decide how and if they used technology as a teaching tool.

Many participants explained that the school had teachers with varying levels of technology knowledge and experience. Julian, the assistant principal, described the staff in groups based on ability. The most advanced group, according to Julian, was the only group that could conceptualize the difference between accessing shared spaces on the school’s network and accessing spaces in the cloud. The other groups of teachers only understood that there were logins for different tools, and sometimes the teachers would confuse the logins. Specifically, understanding the difference between logging into a Chromebook and logging into a desktop computer was especially tricky since one login was the Google login and the other was the network login. To a teacher who had not yet conceptualized the difference between a Chromebook and a desktop, this was a difficult distinction to learn.

There was a perceived division between secular studies teachers and Judaics teachers concerning technology knowledge. “You’ve got two different groups here: you’ve got secular studies teachers who are already in that world and using [technology]” (Julian, Interview, February 3, 2015). The other group was the religious teachers who teach Judaic, secular, and Hebrew language subjects. The participant explained, “The
more challenging piece are people like me because the less secular you are, really, the less exposure you have to that world” (Julian, Interview, February 3, 2015). A participant said this of his fellow teachers, “…A lot of the teachers, especially the Judaics teachers, are not technologically savvy themselves, so they are not leaning on it as heavily” (Bob, Interview, January 21, 2016). A teacher’s level of proficiency in technology was cited as a reason why a teacher may or may not use technology.

Administrators, parents, and teachers explained that the students had basic computer skills and felt comfortable with the Chromebooks using words like “comfortable” and “quickly adapting” when describing the students. One teacher suggested that because of their age, students were more comfortable with technology indicating that they had “grown up with this technology” (Bob, Interview, January 21, 2016) and “some of them just seem to take to it like fish to water” (Bob, Interview, January 21, 2016). Sometimes, this feeling regarding the readiness of students to use the Internet depended on the grade level of the student. One teacher said, “The Freshmen need more babysitting, hand-holding” (Bette, Interview, January 26, 2016). Bette also indicated that the seniors were able to navigate the Chromebooks without step-by-step directions. Sarah, another teacher, shared that she thought the school needed a computer class to help students who have come to the school with varying levels of technology knowledge.

Adults described students as excited about the technology. Before the Chromebooks were distributed to students, one teacher described the feelings of the students, “They are so excited. They are like, ‘When do we get it? When do we get it?’ and I am like, ‘We are still working on it’” (Mia, Interview, September 17, 2014). One
teacher shared that the 9th grade students were “into social media.” She continued, “I thought the girls were going to be drastically different, and they are just typical teenage girls.” (Bette, Interview, January 26, 2016).

**Frequency of use.**

Technology was used sparsely in the school. The Language Arts teacher included it in her lessons once a week, and other teachers allowed students to use the Chromebooks for typing notes; however, they did not create assignments or activities around the use of the Chromebooks. Many teachers liked the idea of technology in the classroom; nonetheless, when asked for examples, only a few provided instances of how they did or could use it. When asked how she might use the Chromebooks, a math teacher explained, “Maybe not me, but…somebody else like a language arts teacher or the Hebrew teachers…for them, there is so much possibility. The science teachers. There is so much possibility out there for computers” (Mia, Interview, September 14, 2014).

A different math teacher, who was reluctant to use technology in his own class, said, “Technology is great for modeling. …Um, especially in the sciences… physics.” Both math teachers were hopeful about technology, but they did not provide specific ways they thought it would benefit students or their own math classroom. The math teachers also liked to point out that the computers would be great for a subject other than their own.

Participants were adamant that the Chromebooks were not used often in the classrooms. At the beginning of the introduction of Chromebooks to the school, a student explained: “Those are the only two classes I have used the Chromebooks in.—World
History and Language Arts. I have not used the Chromebook in any other class” (Lily, Interview, January 27, 2015). Since then, other classes, such as Science and Hebrew, have included the Chromebooks in the tools used for instruction. Judaics classes are most notably absent in the list of Chromebook-using classes. The Judaics teachers, as a group, were all observant Orthodox Jews. Throughout data collection, participants implied that, in the Orthodox community, access to technology was connected to religious observance. The more frum (religious) a family might be, the less technology (i.e. television, Internet, video games) the family would have accessible in their home. This “rule of thumb” applied to teachers as well. The more religious a teacher was, the less likely she would use technology in her classroom. This was mentioned earlier in this section when describing teacher technology expertise. The religious teachers seemed less comfortable with technology than the secular teachers and did not feel that they were masters of the Chromebook devices.

In general, some students used Chromebooks daily for note taking, while other students never used the Chromebook for note taking. Students used the Chromebooks sporadically for teacher-directed activities in secular subjects and Hebrew, and students never used Chromebooks in Judaics classes. The Math teachers both admitted that the Chromebooks were helpful devices for classes other than their own. Students used Chromebooks most frequently in English for writing and editing weekly essays.

**Variety of use.**

Most students used the Chromebooks for typing essays in English. This was at least a weekly occurrence. However, students reported that typing in Hebrew was difficult: “I do not have letters on my Chromebook of Hebrew letters that match up to
the English. So you either have an online keyboard or you just have to guess” (Lily, Interview, January 27, 2015). Typically, bilingual use of the computer required Hebrew letter stickers that adhered to the English letters on the keyboard. The Hebrew stickers helped the user determine which key matched each letter of the Hebrew alphabet. If a student or teacher did not have the Hebrew keyboard stickers, she would need to use the on-screen keyboard. This keyboard was accessed through the settings for the device. This makes a Hebrew assignment more complicated on the Chromebook than by hand. The difficulties with typing in Hebrew with an English keyboard could be one reason why Chromebooks are used less frequently in classes that are dependent on Hebrew typing.

Students also explained that they share Google documents with each other and their English/Language Arts instructor for feedback. One student shared, “We write reports, and we share our documents with each other” (Lily, Interview, January 27, 2015). The language arts teacher indicated that assigning typing, sharing, and editing documents online to students is her greatest technology accomplishment thus far (Jane, Interview, January 21, 2016). The language arts teacher primarily used Google Classroom to accept students’ written work. A student clarified that the Google Classroom system was similar to emailing the work to the teacher.

The same English teacher used a website called “TodaysMeet” to elicit discussion from a group of students.

Look, if I want to be really isolated [Jane, the English teacher] is successfully using the Chromebooks specifically to illicit discussion from a group of girls in the 12th grade who would otherwise have a miserable class because they do not
talk. Because they are too afraid to share their ideas and talk out loud. So she is using one of those discussion boards. (Julian, Interview, February 3, 2015).

This one incident was referred to multiple times by the English teacher, Jane, the assistant principal, and the principal. The website, TodaysMeet, was used once or twice by the teacher. The reasoning behind using the website was to initiate discussion from an otherwise shy and introverted classroom. While the isolated experience did help students with discussion, the strategy was not used frequently enough to see lasting differences in content mastery or confidence levels.

The History/Social Studies teacher and the Consumer Economics teacher described how they used the Chromebooks to have students create projects. The History/Social Studies teacher explained how he gives his students choice for their final projects. His options included video presentations, written essays, three-dimensional models, murals, a speech, or a presentation to the class. Some of those options were technology-centric, but all of the projects relied on the Internet for background research. The Consumer Economics teacher found the assignments she created were difficult for the students based on some issues with the Chromebooks. The teacher explained, “You know, we talked about credit cards, and we would write a newsletter to get out and educate college students about credit cards. And they could not get the newsletter—you know, you could not get the newsletter format. Some found something but they ended up with extra pages” (Sarah, Interview, February 23, 2015). Before the introduction of the Chromebooks, the teacher instructed the students to use Microsoft Publisher on the desktop computers in the computer lab for the credit card assignment. However,
Publisher was not available for use on the Chromebooks, and the Google Drive alternative proved to be difficult to navigate.

In science, students created videos that highlighted science experiments completed in class. The science teacher shared, “We did the thing where we wanted to figure out which soda and the Mentos would blow up the most… so they either videod that with their phone or their Chromebooks,” (Bette, Interview, January 26, 2016). The teacher mentioned that the students used their phones to videotape. This is the only allusion to students using their phones in the classroom for instructional purposes. The students shared the finished videos with each other in Google Drive, but the teacher wanted to share the videos with parents. However, sharing photos or videos of students on social media was discouraged due to safety and religious reasons.

Some teachers, despite difficulties, used the Chromebooks for presentation of materials. A student shared that teachers use the Chromebook to share pictures or images, “Sometimes, if the teacher wants to show us a picture—like a copy” (Desiree, Interview, February 15, 2015). Most classrooms were not equipped with projectors or SMARTBoards. When Desiree said, “like a copy,” she meant that the teachers, instead of copying a paper or image to share with the class, they would share a document or image through Google Drive with the students. This protocol provided the students with the same digital content that was on the teacher’s screen without the teacher needing to make physical copies or collect a projector to use. The History teacher also used the Chromebook to share slideshows with students, “Like, my [teacher] shared a slideshow with us, and [the teacher] had the slideshow in [the] Chromebook so [the teacher] could tell us what we should be looking at in our Chromebooks while [the teacher] was looking
at [another] Chromebook” (Desiree, Interview, February 15, 2015). Instead of using a projector, the teacher shared the presentation so that everyone was looking at the same image on their personal screens.

Using the Chromebook for instruction was optional for teachers, but using the web-based grade book and attendance tools were mandatory. Teachers who did not take attendance using the web based attendance tool were docked in their paycheck. Initially, this was very difficult for some teachers. One teacher explained,

The other day, the craziest thing happened… I will go through it twice because I wanted to make sure that I did it correctly. And then I will push save and it saves the attendance. So the other day I did the attendance and looked up there if I saved it, and it said something like 20 people were absent. What? I had 9 people absent. What happened? So I went back over it and I saw, that for some reason, it makes people absent who were not absent (Diamond, Interview, February 10, 2015).

This confusion could have been attributed to user error or lack of technology training. The teacher had difficulty trouble shooting for herself, and she would visit the assistant principal for help instead of learning to fix the issues on her own.

The most interesting use of the Chromebooks happened while I was observing classrooms. A student in the 10th grade was absent due to a family member’s wedding out of state. Instead of missing the days of school and making the work up when she returned, the student virtually attended class during the entire week of her absence. In each class, she had a classmate who would log into Google Hangout and video call the absent student. The Chromebook was placed in locations in order for the absent student
to be able to see notes on the board or the lecturing teacher. In some classes, the absent student asked questions, took quizzes, and participated in class as if she was physically in the building.

A non-academic, student-generated use of technology was the WhatsApp app for personal devices such as cell phones. WhatsApp was an app that allows users to text over a wireless connection so that it does not incur additional texting charges on a cell phone plan. Many people who live abroad used this app to communicate with their families in other countries. WhatsApp was how the 11th grade gets messages to and from one another. A student explained,

Like let’s say we are planning something, I will just make [a WhatsApp group] with the people who are doing it and it’s just easier that way. Everybody can see it [except the girls without cell phones]. So, that… is like if we are planning we have to call them and inform them or whatever. I feel bad for them because like… FOMO [Fear Of Missing Out] (Amy, Interview, January 13, 2016).

The student was aware that not all of the students have access to a cell phone, and she felt that the students without cell phones were “missing out.” This is interesting because one of the students without a cell phone shared that she did not feel like she was missing out on anything.

Another non-academic use of technology was photography. One student photographed school events and shared them with the school community in a shared folder on the Chromebook. She was not on the Yearbook staff; this was something she started on her own.
Table 5 and Table 6 outlined ways that students and teachers used Chromebooks. The type of use, the type of data source from where the information was recorded, and a description of the type of use are included in the charts. In Language Arts, Science, and History classes, teachers allowed students to take notes on their Chromebooks. Language Arts classes typed essays weekly and students shared and edited documents. In Science, students used the Chromebooks for online activities like viewing websites and creating videos. In Hebrew, students used Chromebooks for activities online. There was no student use of Chromebooks in Judaics classes. All teachers used the Chromebooks for taking attendance and managing grades. The History teacher created slideshows using the Chromebook, and a Judaics teacher used the Chromebook to create handouts for her students. The Language Arts teacher provided written feedback on documents and shared them through Google Drive. The Science teacher emailed students reminders. Math teachers did not use the Chromebooks for anything other than taking attendance and managing grades.
### Table 5. Student uses of Chromebooks

**Student uses of Chromebooks**

<table>
<thead>
<tr>
<th>Course</th>
<th>Who used it</th>
<th>Data source</th>
<th>How it was used</th>
</tr>
</thead>
<tbody>
<tr>
<td>History (all levels)</td>
<td>Self-selected students</td>
<td>Field notes, interview</td>
<td>Students typed notes on Chromebook</td>
</tr>
<tr>
<td>Language Arts (all levels)</td>
<td>Self-selected students</td>
<td>Field notes, interview</td>
<td>Students typed notes on Chromebook</td>
</tr>
<tr>
<td>Science (all levels)</td>
<td>Self-selected students</td>
<td>Field notes, interview</td>
<td>Students typed notes on Chromebook</td>
</tr>
<tr>
<td>Hebrew (all levels)</td>
<td>All students</td>
<td>Field notes, interview</td>
<td>Students accessed Hebrew website and completed activities online</td>
</tr>
<tr>
<td>Science (Chemistry)</td>
<td>All students</td>
<td>Interview</td>
<td>Students recorded video experiments</td>
</tr>
<tr>
<td>Language Arts (all levels)</td>
<td>All students</td>
<td>Interview</td>
<td>Students typed written assignments and submitted them through Google Classroom or e-mail to teacher. Assignments were also shared with other students and edited online.</td>
</tr>
<tr>
<td>Science (Chemistry)</td>
<td>All students</td>
<td>Interview</td>
<td>Students read articles online provided by the teacher</td>
</tr>
<tr>
<td>History (9)</td>
<td>All students</td>
<td>Field notes, interview</td>
<td>Students “researched” topics online for reports</td>
</tr>
<tr>
<td>History (9)</td>
<td>Self-selected students</td>
<td>Field notes, interview</td>
<td>Students used Chromebooks as a presentation aid for reports</td>
</tr>
<tr>
<td>None</td>
<td>Self-selected students</td>
<td>Field notes, interview</td>
<td>Students share photos using Google Drive</td>
</tr>
<tr>
<td>Language Arts (11)</td>
<td>All students</td>
<td>Interview</td>
<td>Students used “TodaysMeet” website to discuss a text</td>
</tr>
<tr>
<td>All (10)</td>
<td>Absent student</td>
<td>Field notes</td>
<td>Student virtually attended class for a week while she was out of town</td>
</tr>
</tbody>
</table>
Table 6. Teacher uses of Chromebooks

<table>
<thead>
<tr>
<th>Course</th>
<th>Who used it</th>
<th>Data Source</th>
<th>How it was used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chumash (9)</td>
<td>Teacher (planning)</td>
<td>Field notes</td>
<td>Teacher used Davka, a Hebrew/English word processor, to develop worksheets in preparation for class.</td>
</tr>
<tr>
<td>Language Arts (all)</td>
<td>Teacher (management)</td>
<td>Interview</td>
<td>Teacher provided feedback for papers and grades through Google Classroom.</td>
</tr>
<tr>
<td>All</td>
<td>Teachers and Admin</td>
<td>Field notes, interview</td>
<td>All faculty were required to post attendance daily using Chromebook.</td>
</tr>
<tr>
<td>All</td>
<td>Teachers and Admin</td>
<td>Field notes, interview</td>
<td>All faculty were required to submit grades electronically.</td>
</tr>
<tr>
<td>Science (all)</td>
<td>Teacher (communication)</td>
<td>Field notes</td>
<td>Teacher would e-mail students reminders and homework assignments.</td>
</tr>
<tr>
<td>History (all)</td>
<td>Teacher</td>
<td>Interview</td>
<td>Teacher created PowerPoint presentations and shared them with students.</td>
</tr>
</tbody>
</table>
Reasons for using technology: Extrinsic and personal properties

The previous section outlined the ways in which participants used technology at SHS. This section helped to explain the reasons the use varied so dramatically from participant to participant. Specifically, use varied due to participant opinions regarding extrinsic factors, like cost, and intrinsic factors, like the perceived usefulness of the technology.

Cost.

SHS was a private school, and they had limited funds. Finances were considered during school decision-making. Previously, a third party was contracted to monitor online activity and “open” and “close” the Internet at certain times and on certain desktop computers in the library. When the school made the decision to go to 1:1 devices and school-wide wireless capability, the third party monitoring system was discontinued. A teacher said, “One of the reasons they wanted to do this [Chromebook adoption] was that it would reduce the expense of having someone monitor everyone’s online activity” (Kevin, Interview, January 8, 2016). While aborting the third party monitoring system may have freed up funds, it left the school with new questions regarding management of the 1:1 devices and settings for the wireless network.

Parents are charged a $500 technology fee each school year. This technology fee started in the fall of 2014 when the Chromebooks were introduced to students. One parent said this of the fee, “You could buy a laptop for that. I mean, I could buy her a computer for four years. But that would be a problem in terms of security and management” (Penny, Interview, March 15, 2016). While the parent thought the cost of
the technology fee was prohibitive, the parent agreed that security and management are pillars to the school’s success in technology integration.

Teachers were aware of the technology fee. Some teachers felt a responsibility to use the technology in order to justify the purchase and the sequential fees involved. “They paid this fee for this electronic thing, and we are not using it a lot. So I also feel like I need to fold it into my material to make it worthwhile” (Bob, Interview, January 21, 2016). This sentiment is not unique. A parent realized that the Chromebooks were not being used frequently, “I feel like there could be a less expensive way to go about this” (Penny, Interview, March 15, 2016). On the other hand, school decision makers understood that technology was not being used frequently, and when asked to purchase more, the response was, “they are not using them, so why should we spend more money to get more?” (Julian, Interview, February 3, 2015).

Financial aspects of technology are inherent to the type of technology access a school may have. Costs of the devices, the network, the on-going network management, and user training all influence the types of end-user access that is available. It is easier to justify expenses for physical objects like laptops or printers than for personnel or professional development (Ryan & Bagley, 2015). Parents were critical financiers for the successful implementation of Chromebooks.

Another cost of technology use was time. Just like money for technology was budgeted, time for technology was also budgeted. A Judaics teacher explained that her class does not lend itself to technology because of time. She taught *Chumash* [Hebrew Bible], and the process of reading the Hebrew and translating the Hebrew to English is the content of the class. She explained to me that Sefaria (a website with online access to
Jewish texts) did not have all of the texts that she needed for her class. She said that every year, her classes’ contents are different because the students are different and they have different needs. The teacher had physical paper pages saved and she literally cut and pastes sources to create handouts for her students. She explained that to make the handouts digital, she would need to scan them, save them, and organize them. To her, using technology was not worth the effort. (Field notes, February 11, 2016).

Frustrated about technology.

Students and teachers, regardless of their level of technology knowledge and expertise, shared feelings about their frustrations with the technology at SHS. Some of the frustrations were related to the types of technology that are available for use, the limits of those types of technology, or the technology infrastructure, including the wireless Internet.

While the school increased the technology available for teachers and students, some teachers felt that it still is not enough. Bette, the Science teacher, complained that the projector was a resource that a teacher could rely on, “I go and use the projector and put that up with the Chromebook, but you cannot really plan for that because if someone else is in the building and they are using the projector…” (Bette, Interview, January 26, 2015). However, from field note data, I learned there are enough projectors for each room to have one. Other teachers preferred the computer lab set up in the old school building to the current 1:1 set up in the new building. “I am using [the Chromebooks], but I do not think it is as effective as it was when I had the computer lab” (Sarah, Interview, February 24, 2015). She continued, “What is sounded like, it was going to be a step up. It’s not. It’s more of a step down. Other than we can say, ‘Oh, we have
Chromebooks” (Sarah, Interview, February 24, 2015). Sarah taught Math courses and Consumer Economics. Before the school transitioned to Chromebooks, in her Consumer Economics class, Sarah had students create brochures using Microsoft Publisher and spreadsheets using Microsoft Excel. For Sarah, the Chromebooks created a problem. She had to find alternative websites for Microsoft Publisher and Microsoft Excel. Google Drive did not have a direct substitute for Publisher, and the Excel substitute, Sheets, could not complete all of the functions that Sarah had previously relied upon.

A student mentioned that it “frustrates [her] when people do not understand how to use [technology].” She was not sure if she wants the technology to be used more because she predicts that the experience will be “frustrating” (Desiree, Interview, February 5, 2015). This was interesting coming from a student who explained that she was comfortable with technology. She was concerned that time would be wasted on setup for a classroom technology experience.

**Technology is a “rattlesnake.”**

Words like “threatening” (Diamond, Teacher, Interview, February 2, 2015), “overwhelming” (Mia, Teacher, Interview, September 14, 2014) and “worried” (Mia, Teacher, Interview, September 14, 2014) were evident in the interview data. These words describe the fearful feelings participants have towards technology. A teacher blamed her age. “Maybe it’s my age. I am a grandmother. Maybe it’s my station in life. I do not know why it is so threatening to me” (Diamond, Teacher, Interview, February 2, 2015). She continued, “We do not learn as fast and technology is not as natural to us, so… and if you do not already have the experience, it can be overwhelming” (Diamond, Teacher, Interview, February 2, 2015).
One math teacher explained that initially the Chromebooks seemed like “rattlesnakes” (Koby, Interview, January 28, 2016) to some teachers. But, the teacher continued, “They seemed to be coming more integral to the SHS culture” (Koby, Interview, January 28, 2016). While some teachers allowed students to bring in the Chromebooks to make student-tasks easier (such as taking notes), other teachers refused Chromebooks for note taking. Refusal of Chromebooks in the classroom could be for a number of reasons such as a distraction or time-wasting device. However, fear is another potential reason.

Participants in many ways described fear. For example, some teachers did not use technology because of fear of the content. One participant explained, “Some of the teachers are like afraid of using a YouTube video where stuff pops up on the side” (Mia, Interview, September 14, 2014). Those teachers did not use YouTube videos in their instruction. But fear of the technology itself is only one type of fear. One participant said, “[The teachers] that do not use [technology] on a regular basis are sort of afraid of it almost as much as they do not know it, but also because everybody else does. And that can be sort of a—I-do not-want-to-show-how-stupid-I-am type thing.” (Mia, Interview, September 14, 2014). Some teachers were afraid of appearing unknowledgeable about a subject. These teachers were experts in their content areas, but they were tentative about showing their lack of skills in technology. The teacher felt like less of an authority figure in the classroom, disrupting the prevailing traditional pedagogy.

Some teachers shared a sense of suspicion with students who are hidden behind their laptop screens. “So if I am in the middle of talking about something and I can see some student completely plugged into the screen, I have a hard time believing it is their
notes” (Bob, Interview, January 21, 2016). This fear that a student is off task is interesting because a student could be off-task without the Chromebook just as easily. The teacher explained that he could not check what was on the screens from the back of the classroom because the classroom was packed so tight.

“A lot of hype.”

Many participants shared statements about the “hype” of technology and inferred that technology does not necessarily dictate a better education. One participant said, “I know people who are intelligent…who use the computer very, very little” (Diamond, Interview, February 10, 2015). The principal asserted her position, “Do I think you have to have technology to learn? No. I do not. I think a lot of this is hype. But, if that is the culture we are living in, I have to do it” (Marianne, Interview, February 24, 2015). The principal’s statement helped to explain why the Chromebooks were adopted in the first place. Even if teachers and students were not using the Chromebooks, the school needed to embrace the 21st century teaching and learning industry standards.

Koby, a Math teacher, explained that the draw of websites like Khan Academy is the “pedagogically perfect” videos. However, Koby continued to explain that the hype of the videos might not actually help the student. “The online video may do it beautifully, but what if she does not understand it? There is no opportunity for that video or that technology to come back and say… let’s break this down in a totally different way” (Interview, January 28, 2016). However, Koby was only considering the video as a replacement for a teacher, not as an extra resource in addition to a teacher.
Koby made his feelings clear, “I personally have no problem with technology” (Interview, January 28, 2016). But, the teacher found technology irrelevant in his classroom. He explained further,

There is no reason to send a girl to Khan Academy, no matter how good it is. Khan Academy and anything like it has one major downfall, and it’s not really a downfall, it’s part of what it is…. No matter how good that session is… and how beautifully pedagogically perfect they put it together, it is still a single presentation. The girl cannot ask a question and what if that particular presentation sounded like Greek to her? (Koby, Interview, January 28, 2016)

This was one of the only comments from a teacher that specifically addressed the affordances and the limits of a technology tool from a pedagogical standpoint. Koby critiqued technology as if it were a classroom teacher replacement, not a piece of the classroom content. When describing other types of technology tools, the teacher explained his lack of integration,

[The Smartboard] simply is not flexible enough yet… It’s not a huge advance over just simply writing it on the board…Technology is a wonderful tool at this point but we are a long way away from it ever having the flexibility of a human brain on the fly (Koby, Interview, January 28, 2016).

Koby made interesting points concerning the affordances and limits of technology, but as a Math teacher, these points were not new. Math teachers at SHS saw technology as a tool for classrooms other than their own.

One parent had similar views regarding the ways that technology could be used. Penny felt that the technology is not a replacement for a teacher, but she had not thought
of the ways that technology could be used in a classroom with a teacher. She said, “It is better for them to be learning from the teacher and not on the screen, so the ways it could be used more, I do not think it would be beneficial” (Penny, Interview, March 15, 2016). The parent’s underlying belief that learning from technology is subpar to learning from a teacher is similar to the beliefs of Koby, the math teacher, who viewed technology as a replacement for teachers. However, both the teacher and the parent admitted that technology as a “tool” was an appropriate use in the classroom.

A student explained that the classroom was a getaway from the technology “hype” in the outside world. “Nowadays, the world is very techy so, I feel like the classroom is the one thing where it is old—paper and pen, you are writing it” (Molly, Interview, January 12, 2016). This reflects the student’s desire to escape the “hype” in her personal life by embracing the skills of an earlier era sans technology.

These ideas that technology in the classroom was “hype,” and that people did not necessarily need technology practice or use to be successful were prevalent throughout the Interview data. It also helped to explain why some teachers may not use the Chromebooks as often as their peers.

**Affordances and limits of Chromebooks.**

There were many characteristics of the Chromebook that the participants described as helpful and successful. The cloud was one of these characteristics. The cloud was not an affordance unique to Chromebooks. However, the cloud was the only way students can share documents or assignments from the device since there is not a USB port or CD/DVD drive. “The cloud” refers to where digital files are saved on the Internet. The cloud is an online space, not on a physical hard drive or disk of a device. A
student explained that she loved the convenience of the cloud and the Chromebook, “You can finish [your assignment]; close [your assignment], and you have [your assignment] at home.” She continued, “Yesterday, I forgot my notes at home, so I took them on the Chromebook, and when I got home, I opened it up and wrote them in. That works really well” (Amy, Interview, January 13, 2016). This affordance required the student to have access to a computer with Internet access at home.

Another positive characteristic of Chromebooks was the ease of management. A teacher who worked on the management of the Chromebooks mentioned how easy it was to maintain the Chromebooks using the Google Admin Console. From anywhere with an Internet connection, apps can be added or deleted on all devices with one push of a button. This particular affordance was unique to the Google Chromebooks. For a school with non-Chromebook devices, someone would have to physically visit each device and download software individually.

Time was also an affordance that was mentioned by participants. Using the Chromebooks for an assignment in comparison to using computers in a lab saved valuable time for the Consumer Economics teacher. Another teacher described this success,

Little things have been very successful. [A teacher] uses the computers for consumer economics. The fact that [the teacher] does not have to plan whole class periods where they went to the computer lab, now, because they have computers with them. [The teacher] can have them do a little bit on their computer, put their computer away and do the rest without loosing time
transitioning or having to rearrange her lesson (Julian, Interview, February 3, 2015).

These three affordances—convenience of the cloud, ease of management, and saving time from transitioning to a computer lab—were specific examples of ways the technology has helped students and teachers at SHS. These affordances are all related to management of resources.

The Chromebooks had limits. They were unable to run software such as the Microsoft Office Suite. They also had problems with file types with certain extensions such as .exe or .dll. One teacher described his issues with this, “I know one time, there was some sort of visual demo or something [a student needed] for an online course, and it does not work on Chrome. One of them needed… just certain files on Chromebook do not work with a Chrome browser. Certain extensions” (Kevin, Interview, January 8, 2016).

Planning.

Both students and teachers described the lack of planning regarding classroom technology use. One teacher worried about school wide planning regarding the Chromebooks, “I think the first step is… you know, an evaluation of what we want the girls to be able to do and then we can work from there, and we have not done that” (Sarah, Interview, February 23, 2015). The teacher felt as if the decision to adopt Chromebooks was rash and teachers were not consulted. The teacher also expressed the lack of productive conversations with the staff about how the Chromebooks should and could be used. It was interesting to note the lack of conversation regarding lesson planning. One teacher addressed it by explaining that he does not lesson plan.
That’s a really hard thing to do- pre-planning it- in a Prezi or a slideshow or… anything else. It is a really, really, really difficult and since I go into every single class with a single line lesson plan: We are going to discuss quadratic equations today (Bob, Interview, January 21, 2016).

Here, Bob described his concerns about lesson planning in general. With or without technology, his lesson plans consisted of one sentence per day because he could never be sure of whether or not his students would understand the day’s content. In this quote, he also showed that, to him, technology integration had to include teacher presented material (i.e. the Prezi). He did not think to include technology that students might use on their own to help understand difficult math concepts.

**Religious and cultural influences on technology use: Access**

Religion and culture dictated many decisions within the school context as I described before such as curriculum, calendar, content, and behavior. The way that Internet safety was handled also reflects the religion and culture of the school. Specifically, the school’s filtering system, the whitelist, was the one way that administrators could control the accessibility of the Chromebook devices.

Once the school decided to adopt a 1:1 Chromebook initiative, the concern was the security of the wireless Internet network. Since the school had not introduced wireless Internet into their building until the 2014-2015 school year, this was the first time the school had to decide on a large-scale security plan. A participant said this about the reasoning behind having strict filters, “If you’re going to have Internet access, do we have a way to lock it down where we feel secure? You know… they could be on all
kinds of things all the time” (Julian, Interview, February 3, 2015). The fear that students would visit non-academic sites was apparent in most adult participants.

**Whitelist: Maintaining modesty.**

The school decided to use a whitelist system for the Internet in order to block all websites except for those domains that are included on a staff-managed whitelist. Students and teachers were asked to e-mail the name of a website to the technology management person in order to be checked and then included (if deemed appropriate) in the whitelist. Students and teachers were told to allow for up to 24 hours for the website to be included on the whitelist. The Google App suite was accessible on the computer whether or not the computer was connected to the Internet.

The person maintaining the whitelist was a parent and a rabbi. Many parents, instead of paying the entire cost of tuition, provided a service to the school community in order to get a reduced rate for his/her daughter(s). He said this about his position,

> Um, a typical day, sometimes I have things waiting for me like the teachers or students emailed me that they need something whitelisted or I’ve been asked to install an app for the school. That is usually what I am doing. (Kevin, Interview, January 8, 2016).

Before there was an assigned person to monitor the whitelist, an administrator was maintaining the whitelist, “It’s still very tedious, they still request, and I have to preview the site, and sometimes it happens in an hour, and sometimes it takes two days” (Julian, Interview, February 3, 2015). But the whitelist was not enough in some cases. Sometimes students found work-arounds and attempted to visit sites that were not approved. A teacher said, “I have heard from [name excerpted] that there have been
other students doing things that are not academic on their Chromebooks” (Bob, Interview, January 21, 2016). The teacher continued, “I would love to have a button where I could turn off the Internet, but of course they are using Google docs to take their notes” (Bob, Interview, January 21, 2016). Access to the Internet, even on whitelisted websites, was distracting and frustrating to some educators.

The whitelist helped to maintain a level of modesty that was fitting to a Bais Yaakov school. When initially pitching the idea of a school-wide wireless Internet and Chromebook initiative to parents, restricted access to the Internet was a selling point of the plan. The principal explained that parents were concerned at first but, “As soon as they knew—in the beginning, but when we explained that there was a whitelist, and this is how we do it, they seemed to be very calm about it” (Marianne, Interview, February 24, 2015).

Adults in the school community felt that there were troublesome characteristics of widespread Internet availability. A teacher explained, “The Internet is an issue. We do not want to give the girls free access” (Sarah, Interview, February 23, 2015). A parent said, “Because of the content that is out there, we want it to be supervised and filtered. But also because of just the time that is spent—often wasted—on the computers” (Penny, Interview, March 15, 2015). This idea of time spent on the computers as wasted time was interesting. A teacher explained that she even had to limit her own access,

I have to personally make myself say, “Go on it three times a day—in the morning when you get home, or whatever; in the afternoon back from school; and after dinner—but not all day long.” Not after 9:30 at night because I could stay up too late answering emails (Diamond, Interview, February 10, 2015).
Culture and religion played a role in the limited Internet access. One participant explained, “SHS, like most schools, does not want students accessing improper sites, and a lot of it has to do with Judaism. Judaism is more sensitive to what is improper than some people” (Kevin, Interview, January 8, 2016). Kevin continued to share his feelings about the school community that speaks out against the filters, “The people that do not like it—they need it the most” (Interview, January 8, 2016).

One trend in the interview data was the feeling that students lack the skills necessary to be unbridled Internet users. In some cases, teachers, administrators, and parents describe these pre-requisite skills as responsibility, self-motivation, and critical thinking. Adult stakeholders described students as irresponsible when explaining the purpose of the whitelist and filtering system. As one participant explained, “I cannot have kids with full exposure to the Internet because they are irresponsible at this age” (Marianne, Interview, February 24, 2015). The school did not provide opportunities for students to learn Internet safety or computer skills. When asked about this, the principal explained that the students learned Internet safety skills in the feeder middle school. Another participant shared another reasoning for the filtering system, “If a person has the ability to do something wrong, and they like to do that wrong thing, it is very likely they will do it” (Kevin, Interview, January 8, 2016).

**Difficulties with the whitelist.**

The limited Internet access became a barrier to teaching and learning with the Chromebooks. For example, one teacher explained that she often has to use the projector when she can not share a website with her students, “I am like, this is really cool. You have to see this, but you cannot” (Bette, Interview, January 26, 2016). Another teacher
explained that if they had access in her room when she wanted it, it would be helpful.

She said,

I can walk around and see what they are doing—to be sure that they are not on anything that they are not supposed to be on or something. We were told initially that we would have a way of viewing it on our screens and all that kind of stuff. Apparently, we are not doing any of that (Sarah, Interview, February 23, 2015).

The whitelist made it difficult for students to complete projects in school.

Students had to wait to get home to work on school assignments because there were not resources available to complete the project.

So I am doing a report right now about the cultural revolution and I kind of need background information, and I want to go on maybe Encyclopedia Britannica and Wikipedia or something, and when I click on the website, it says that it’s blocked. And it’s frustrating because I need… I want to work on it at school instead of wasting my time at home (Lily, Interview, January 27, 2015).

Some students could not even go home to do their schoolwork. Boarding students were not allowed to have Internet access at the home in the community where they board. However, students found a way to bypass this barrier by visiting a local coffee shop using their personal laptops.

As a boarder, we’re not allowed to have Internet at home. So, I mean, I can go to like Starbucks and do my research there….A lot of the kids in my class, though, can go home and do research there (Desiree, Interview, February 5, 2015).

School assignments created a need for an open Internet space. However, if a student did not have open Internet at school or at home, where she would be supervised, the student
had to resort to going to a completely unsupervised, public space with no or low filtered Internet access in order to complete her assignment.

This tension between the need for a whitelist in order to maintain cultural and religious standards and the need for an open and useable Internet for instructional purposes was apparent with almost every participant I interviewed. The principal acknowledged this, “You cannot hide the kids from it. They have to be able to deal with every single thing that is out there in the world” (Marianne, Interview, February 24, 2015). However, no one had realized an acceptable solution. The principal suggested this,

This is what I would like to see happen. I do not know if it is possible. If you have an open- you have an English teacher, a language arts teacher, and she wants them to have an hour of open Internet and she’s in the room with them, I am fine with that. The problem is if we open the Internet then some kid sitting in the library can also get it. So if we could do it by name, we have a list of who is in her class and we tell our IT person that all of these girls have to have open access for these 45 minutes. Is that possible? I would love that. It should be able to be do-able. (Marianne, Interview, February 24, 2015).

Conversations between administrators, teachers, and the technology administrator regarding what was working or not working with the Chromebooks and the network did not happen frequently throughout the year, if at all.

An important topic that was raised by participants is accessing (or not being able to access) certain software using the Chromebooks. The Microsoft Office suite was unavailable to the Chromebooks unless a user signed into to the Microsoft network online.
Signing into Microsoft was labeled inappropriate because then the students would have access to another email outlet that was not monitored. So, the Microsoft Office suite was unavailable to students. One teacher explained why she wanted the students to work with Microsoft Office,

   Somebody graduates from here and let’s say they do not go to seminary. They are, coming out of SHS, they are going to look for a job. Part-time and they go to college, let’s say. It is very nice if they have the Office skills. I am not sure that what they are going to have with a Google Doc if they go into an office environment. I do not know if they use it in offices, really (Sarah, Interview, February 23, 2015).

The teacher felt that Microsoft Office skills were necessary if a graduate wants to work in an office environment. This aligned with the idea that the purpose of secular studies in an Orthodox environment was to one day land a paying job (Krakowski, 2008).

   About 20% (approximately 10) of the students attended class online. These classes were joint enrollment courses at a local college and students obtained college credit if they completed the courses with a passing grade. The courses were online, and students were provided a “free period” to work on those online courses. However, not all websites that were within the course were whitelisted. As a student came across a link that did not open, she had to send it to an administrator and wait for it to open. Many participants described these students as frustrated with technology. One participant shared, “I do not think they have given up—the ones going to the virtual school find it very, very frustrating. They cannot… do what they need to do in school” (Julian,
Interview, February 3, 2015). Most of the comments regarding students’ frustration with the technology were linked to students who attended online classes.

However, regardless of the feelings teachers, administrators, and parents had about students’ individual abilities to deal with the Internet, one stakeholder explained. “As long as there is a responsible party in the room that’s walking around and seeing what everyone is doing, I have no problem whatsoever” (Marianne, Interview, February 24, 2016). This illustrates the common theme that as long as a responsible adult was supervising students, nothing inappropriate can take place.

Ultimately, teachers, parents, and administrators saw the students as struggling in preparedness, both digital skills and life skills. “The lack of motivation, the lack of willingness to work hard, the lack of critical thinking skills. They do not know how to explore, think, apply. They do not know how to make their brains work hard” (Bob, Interview, January 21, 2016). But, with all these difficulties with student preparedness with computers, stakeholders explained that students “need exposure and experience with computers.”

Students were acutely aware of adult stakeholder feelings. One student said, “I think the teachers should trust us more because sometimes they feel like they just… they think we’re… we’re average teenage girls and that we just look at inappropriate things or do nonsense on them [the Chromebooks]. But, we can focus. And if we have the Chromebooks, we will use them in the right way.” Another student said, “I think they need to trust us more inside and outside the classroom.”
Summary of Findings

Through this research, I explored what happens when a Bais Yaakov school introduces 1:1 Chromebooks to their school community for teaching and learning. I used observation and interview data to explore my research questions concerning how and why technology is used and how religion and culture influence that use of technology.

The unique context of Schachter High School was defined by its observance of Jewish laws and customs. The observance crossed over into class content and curriculum, pedagogy, and behavior. On the other hand, SHS was still a school filled with “typical teenage girls” who had a typical high school experience with classes, homework responsibilities, and friendships.

Technology was introduced in the SHS curriculum quickly. They decided on the Chromebooks and put them into the hands of teachers and students over the course of a few months. The level of technology knowledge and understanding by the staff was varied, with some who used it regularly and considered themselves to be “tech savvy” and others who did not know how to turn on or log on to the Chromebooks months after they arrived at the school. These varied levels of expertise led to varied levels of use and frequency of use.

The Chromebooks were used for mostly typing assignments and notes. However, there were a few times when the Chromebooks and the Google Chrome platform helped students to collaborate. For example, students shared and provided feedback on papers with each other using the Google Drive feature. The most interesting type of use I witnessed was a student who was absent became a virtual attendee to class thanks to Google Hangouts.
Participants explained that lack of time, fear and frustration were reasons that some teachers did not use technology. Other reasons included pedagogical beliefs about teaching including that the technology cannot replace a human teacher and that it is a good tool, but not a good substitute for a human teacher. Participants shared that the Chromebooks have been helpful for organization and management of documents. A student could work on a paper at school, and without using a USB drive or disk, she could work on the same paper at home (as long as she has Internet access). Planning for technology use was another reason cited for lack of technology use. Teachers explained that they could not plan ahead and predict what content the students would be able to tackle until that particular day.

The biggest influence religion and culture had on technology use at SHS was the way that the Internet is secured. The school maintained a whitelist, and approved each website one at a time to be included on the school’s safe list. For students working on research projects and online courses, this was difficult because it could take up to 24 hours for a website to be approved. Teachers also had problems when they wanted to share web based materials with students without admitting the website to the whitelist manager for approval. This made immediacy of research difficult and lead to workarounds from the teachers and students. In the next chapter, I will illustrate my findings through activity theory, both a method and a theoretical framework to this project.
Chapter 5: Activity Theory Analysis

In the previous chapter, I answered my research questions using the results of my thematic coding. In this chapter, I will share my activity systems analysis. Engeström’s third-generation activity theory allows for analysis of multiple intermingled systems (Engeström et al., 1999). Third-generation activity theory accepts that systems occur simultaneously and are interconnected, and it can be an appropriate method of data analysis for a school environment (Engeström & Glăveanu, 2012; Yamagata-Lynch, 2010). This kind of analysis can help a researcher showcase real-world systems and highlights tensions within these systems that can be then used as information to pinpoint opportunities for professional development and formative change (Engeström & Glăveanu, 2012). In this analysis, I created a visual representation of the activity system within the Schacter School. Along with the system, I highlighted tensions and inner contradictions.

Inner contradictions can be identified as “anything within the system that opposes the overall motive of the system, the aim or purpose that subjects within the system are individually or collectively striving toward” (Allen, Brown, Karanasios, & Norman, 2013, p. 840). Engeström (1987) described four levels of inner contradictions (see Table 5.1). These inner contradictions “impose tensions on participants’ work settings and help them change the nature of an activity to overcome those tensions” (Yamagata-Lynch & Haudenschild, 2009, p. 509). The inner contradictions should not be viewed as problems that need to be fixed; however, they are examples of how the system exemplifies to a change process. These inner contradictions change as the parts of the activity system shift and grow.
Table 5.1

Levels of contradictions in activity systems (Engeström, 1987).

<table>
<thead>
<tr>
<th>Contradiction level</th>
<th>Engeström's (1987) definition</th>
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<tbody>
<tr>
<td>Level 1: Primary contradiction</td>
<td>When activity participants encounter more than one value system attached to an element within an activity that brings about conflict.</td>
</tr>
<tr>
<td>Level 2: Secondary contradiction</td>
<td>When activity participants encounter a new element of an activity, and the process for assimilating the new element into the activity brings about conflict.</td>
</tr>
<tr>
<td>Level 3: Tertiary contradiction</td>
<td>When activity participants face conflicting situations by adopting what is believed to be a newly advanced method for achieving the object.</td>
</tr>
<tr>
<td>Level 4: Quaternary contradiction</td>
<td>When activity participants encounter changes to an activity that result in creating conflicts with adjacent activities.</td>
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Tensions are a defining aspect of third-generation activity theory (Yamagata-Lynch, 2010). Tensions have been defined as the contradictory influences of components within the system that “put the subject in contradictory situations that can preclude achieving the object or the nature of the subject’s participation in the activity while trying to achieve the object” (Yamagata-Lynch, 2010, p. 23). Tensions can also occur between systems (Yamagata-Lynch, 2010). These tensions help researchers and practitioners understand complex settings and help to design future solutions for the system (Engeström & Gläveanu, 2012).
Figure 5.1 Third Generation Activity Theory Example.

Figure 5.1, is an illustration of third generation activity theory. In this illustration, two activity systems are shown, including relationships between the two. In the following findings, multiple activity systems will be illustrated. However, they all exist within the same context, in that individual systems are intertwined and coexist within the same school context.

I made several assumptions about this study that align with using activity theory as an analytical tool. First, I identified the school context as a complete system including parents, students, administrators, and teachers. I did not include funders or the school’s governing board, as they are normally not involved in day-to-day operations of the school. Second, I identified the Chromebooks as artifacts that were always present within the school systems (since they were openly available to teachers and students). Third, the Chromebooks’ constant presence had the potential to illicit cultural tools. Yamagata-Lynch describes cultural tools as mediating artifacts that can include abstract knowledge, feelings, or beliefs (2010). In this case, the presence of the Chromebooks (a mediating artifact) conjured subjects’ feelings or beliefs concerning Chromebooks (cultural tools). Fourth, these cultural tools (i.e. subjects’ feelings or beliefs) concerning the
Chromebooks impacted use and nonuse. Fifth, the macro- (school-wide) and micro- (classroom) systems coexisted and were intertwined with each other.

**Macro System**

**Schoolwide Technology**

Figure 5.2 Macro System: Schoolwide Technology.

In Figure 5.2, the central system in this analysis is the macro system that includes the administrators as the subject. During my research project, there were two administrators at SHS: the assistant principal who was in charge of day-to-day operations and secular studies and the principal who was in charge of all other school related operations and Judaic studies. Their shared goal was to integrate technology in classrooms throughout the school building while maintaining the objective of a dual curriculum.
Within this context, the administrators created rules regarding the Chromebooks for the school community (made up of parents, students, and faculty). These rules included how and when the Chromebooks could be accessed, what types of Internet sites would be available, and how teachers would input grades and attendance into the online databases. Some teachers, as described in the thematic analysis, disagreed with the rules regarding Chromebooks, and the teachers would have preferred more guidance in the vision of how they were to be used for student learning. Within the system’s community, not all of the teachers, parents, and students agreed with the goal of technology integration. For example, even though teachers were required to use the Chromebook for taking attendance and maintaining grade records, some teachers chose not to use the online databases for grades and attendance. Instead, a few teachers rebelled against the requirement and handwrote their information and hand delivered it to the administration.

The division of labor in this system included assigning specific people or groups of people responsibility for tasks within the activity system. The administrators established a whitelist and hired someone to maintain it. The administrators also selected the online grade and attendance database and they provided technical support to teachers for the online tool. Teachers were responsible for creating lessons that included the use of the Chromebooks. Student roles included completing assignments using the Chromebooks as directed by classroom instructors. Parents were responsible for creating an environment at home where students could complete school assignments. This meant that students needed permission to use a computer (students could not take Chromebooks outside of the school building) with access to the Internet with similar or, more often than not, more liberal filters than the school whitelist.
The mediating artifacts, or tools, used to help the administrators reach the goal of technology integration were the training sessions for teachers, the physical Chromebooks, and the online grade and attendance systems (ALMA/Jupiter). The training sessions for the teachers were organized by the administrators and were led by an instructor from a neighboring university. The training session’s material was typical for a public school, and the instructor introduced different Web 2.0 tools that allow students to create, collaborate, and share content. The Chromebooks (one for each student and eight for the teachers to share) were made available for the students in an upstairs laptop cart. The online grade and attendance systems were also selected by the administration for the faculty to use to keep track of daily information.

The outcomes of this system were limited academic technology engagement, continued Bais Yaakov dual curriculum content, and extended opportunities for students to use technology. As described in the thematic analysis, students did not use the Chromebooks for frequent or varied academic uses in the classroom. The Bais Yaakov dual curriculum continued as it had in the past, and there was not much disruption from the Chromebooks in terms of the content students were learning and how they were learning it. However, with the introduction of Chromebooks, students had more opportunities to use technology. For example, students were allowed to use the Chromebooks in classrooms for typing even if the teacher did not directly tell the students to do so. This type of autonomy allowed students to find non-academic ways of using the Chromebooks. One student created a shared folder where she uploaded pictures on a regular basis.
Secondary contradictions occur between elements of an activity system. They can also be described as tensions as illustrated in Figure 5.3. This system created four tensions: (a) Completing training sessions while teachers knowledge and skills were unaddressed, (b) Attaining technology integration while administrators shared different beliefs about how to attain technology integration (c) Adhering to rules about using computer for grades and attendance while teacher technology knowledge and skills were limited, (d) Using Chromebooks while whitelist infrastructure was difficult to maneuver.
Tension (a) emerged in both the thematic analysis and the activity systems analysis. The training sessions were not customized for the teacher culture at the school. The instructors were unaware of the particular cultural aspects of the school and did not alter instruction based on the audience. For example, the instructor talked about including students taste (including popular music and film) into instruction. This was not deemed appropriate school content at SHS. Tension (b) illustrated that the administrators had different views on what technology integration means and what the technology integration at SHS should look like. One administrator explained that she had more secular views of technology and tended to disagree with the religious principal on the use of technology in the classroom. The religious principal openly shared that she did not know what technology integration should look like in a religious school. The tension (c) was illustrated in the activity system because some teachers chose not to use the computer to input grades and attendance, and it created difficulties for the school community. Instead of completing this task using the computer initially, the teachers provided handwritten grades and attendance to the assistant principal who then had to input the data into the computer system. Tension (d) showed that Chromebooks were helpful, but teachers felt that they needed other items like projectors and alternatives to Microsoft Office to be successful.
Micro System

Student-Use Technology

In Figure 5.4, students at SHS seemed respectful and goal-oriented. The goal for the students was to complete their school assignments with the aid of technology. Rules within this activity system included classroom rules, the school-wide rules, family rules, and the rules connected with religious observance that, in many cases, permeated between home and school.

The community of this activity system included parents, teachers, and administrators. In the division of labor in this activity system, parents provided resources for the students, including tuition that encapsulated the technology fee for the Chromebook. It also includes parents providing an environment at home where students are able to complete homework. This sometimes includes an Internet connection and a computer with access to the Internet. Students are responsible for completing any
assignments that are designated for them, and teachers are responsible for creating learning experiences for their students.

Mediating artifacts included face-to-face communication with other stakeholders like parents and teachers. It also included technology resources and activities such as the Chromebooks, photography, and the WhatsApp app. The outcomes of this system included new ways to asynchronously communicate with other students including WhatsApp and e-mail. One of the most interesting outcomes of this activity system is the photography sharing activity. One student, as described in the thematic analysis, took pictures regularly and posted them in a shared folder in her Google Drive. Students could view the photos at their leisure, and many students looked forward to the shared photos. When I interviewed students, they shared similar frustrations concerning the ability to complete school-assigned projects at school. They found that the whitelist system did not allow them to complete true research. They were only allowed to visit sites that the teachers had previously vetted for content.
Tensions within the Student-Use System

(a) Completing assignments while observing school rules/religious observance
(b) Completing technology-aided homework assignments at home while observing school rules for boarders.
(c) Accessing useful Internet academic resources at home while parents maintain an Ultra-Orthodox home.

Figure 5.5 Micro System: Student-Use Technology with Tensions.

Tension (a) illustrated that students had difficulties with the whitelist. At school, students had to wait up to 24 hours for a website to be listed on the whitelist. This made activities such as research, time consuming and choppy. Instead of being able to look at a website immediately to determine its usefulness for a particular search objective, the students would have to wait. This slowed down the research process and caused many students to avoid this process at school and complete the assignment at home, where filters were not as strict. This is similar to tension (b), completing technology-aided homework assignments at home while observing school rules for boarders. Because students were unable to complete research assignments at school, students were forced to complete the research at home. However, not all students had access at home, and some students, boarders, were not allowed to have Internet access at home, per the student handbook. Some boarders went to local coffee shops that had completely unfiltered Internet access to complete their assignments.

Summary

I found that the object of the central activity system, technology integration, as currently defined in the literature, within a Bais Yaakov curriculum, is a type of paradox. This is the primary contradiction in the activity system (see Table 5.2). The community did not share a common understanding of what technology integration should look like in
This includes the inherent challenge between becoming a 21st century school and adhering to the demands of an Ultra-Orthodox religious curriculum. For example, the science teacher, Bette, faced the challenge of a whitelisted site during a classroom experiment. She asked the students to “look something up” using their Chromebooks, but the sites they found were blocked. Bette then gave the students her cell phone to complete the task. While this decision promotes a 21st century educational vision, it may not have aligned with the school’s beliefs regarding the safety of the Internet.

In a Judaics classroom, the teacher did not use technology in her class because she said it was more time consuming for her to save her source sheets digitally than to physically file them or even create new ones that are specifically tailored to her particular class. The teacher literally cut, with scissors, and pasted, with glue, sources on to the source sheet that she used in class. The Judaics teacher explained that she knew where the sources were in books, and to take those sources, scan them into the computer, and then manipulate them in a word processor would double her efforts. Her beliefs regarding what technology integration might look like in her classroom were limited to replacing existing classroom practices.

Table 5.2

*Levels of contradictions in the Schachter School’s central activity system (Engeström, 1987).*

<table>
<thead>
<tr>
<th>Contradiction level</th>
<th>Observations from this study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1: Primary contradiction</td>
<td>Teachers, administrators, students and parents did not share a common understanding of what technology integration should look like in a Bais Yaakov school</td>
</tr>
<tr>
<td>Level 2: Secondary</td>
<td>As the Chromebooks were introduced into classrooms, tensions</td>
</tr>
</tbody>
</table>
contradiction occurred when systems (such as the whitelist at school and Internet rules at home) did not allow students to complete assignments.

Level 3: Tertiary contradiction

Students introduced new methods of communicating using the Chromebooks that were not used by teachers or administrators.

Level 4: Quaternary contradiction

Students and teachers, administrators, and parents have different expectations of technology.

The secondary contradictions occurred between two elements of a system. These were also described as tensions in earlier analysis. Most of the tensions were illustrated as a frustration when the rules of the filtering system did not allow for students to complete assignments at school, and students had to take work home to complete. However, additional tensions occurred when the home systems also did not allow for students to complete assignments.

A tertiary contradiction that emerged was that students used the Chromebooks and other technologies for self-initiated activities. For example, students worked within the confines of the whitelist system, and they found methods for communicating and sharing photos with each other. The ability to share digital photos with each other was not available before the introduction of the Chromebooks. Although this activity was not administrator or teacher sponsored, it did not disrupt the Bais Yaakov curriculum by violating religious restrictions. Some students also used their cell phones to bypass some of the Internet restrictions at school. While students were not allowed to use cell phones during the school day, after school students used the WhatsApp texting application to communicate with each other and coordinate class wide activities as opposed to using a landline to call.

A quaternary contradiction within the system is the possibility that the new methods of communicating that the students developed using technology (i.e. the photo
sharing and the WhatsApp) still do not align with the religious expectations of the administrators, teachers, and parents at the Schachter School. The photo sharing was an unexpected consequence of introducing Chromebooks into the school environment. The use of WhatsApp to communicate is a use of technology that occurs outside of school because it is not allowed to occur on school property. There is also a conflict within the student community regarding WhatsApp because not all of the students own or have access to a cell phone to have access to WhatsApp.

Third generation activity theory highlights the interconnectedness of activity systems within a context (see Figure 5.6). In the central system and the student system, there was a shared outcome. The introductions of Chromebooks into the Schachter School provided the students extended opportunities to use technology for both academic and personal purposes. While this was not the goal of either system, it was an outcome.

Figure 5.6 Shared Systems.

Tensions within the different activity systems illustrated in this chapter provided a starting point for organizational change and discussion. Specifically, tensions regarding subjects and their cultural tools, or beliefs, about technology were present in multiple systems. Administrators did not share a technology vision with each other and with the
school, and this influenced how technology was (or was not) used throughout the school year.

The school’s whitelist, which was created as a way to maintain control of the content that could be accessed by students, caused students to avoid using the Internet at school because of lack of usefulness. Since students were left with the option of using the limited Internet at school or not completing assignments, students had to find alternative methods of accessing the Internet. Most students used their Internet connections at home, although boarders had to find alternative locations (such as Starbucks) to access the Internet. Moving the onus for Internet use out of the school building both creates challenges for families and relieves the school of the responsibility to keep students safe.

Yamagata-Lynch described four benefits to activity systems analysis. Investigators can “(a) work with a manageable unit of analysis, (b) find systemic implications, (c) understand systemic contradictions, and (d) communicate findings from the analysis” (2010, p. 5). In this study, by using activity theory as an additional tool for data analysis, I learned more about specific tensions and contradictions, within the school system, and I shared those findings with stakeholders and other interested parties. Unveiling these contradictions can immediately help practitioners within the system of interest as well as practitioners in other schools who are looking to introduce new innovations to their staff.
Chapter 6: Discussion and Conclusion

Technology integration has been described as an “obvious need” for schools due to the 21st century world we live in, filled with tablets, cellular phones, and readily available streaming content (Pittman & Gaines, 2015, p. 540). Research conducted in schools explains that even though billions of dollars have been spent on technology, there is not widespread use in the classroom (Bakir, 2016; Miranda & Russell, 2012). Research on technology integration in classrooms has been conducted since the late 1980’s as personal computers started to become commonplace in schools (Bakir, 2016; Cuban, 1986; Dwyer & et al., 1991; Elmer-DeWitt & Bjerklie, 1991; Hall, Chamblee, & Slough, 2013; Verhagen, Plomp, Mathias, Rushby, & Budgett, 1988). However, little is known about what happens when a school has not officially adopted technology until 2014—decades after the initial studies on technology implementation (Dwyer, Ringstaff, & Haymore, 1994; Hall et al., 2013).

The Schachter School was considered a late adopter, as it had no prior widespread technology implementations before 2014. This research can provide a window of insight for other late adopters. However, the context of the school was important. Schachter High School was an all-girls, religious, Bais Yaakov school. This context was unique because the religious and cultural restrictions for the Internet were demanding.

Activity theory and ethnographic grounded theory complement each other. Activity theory helps to create macrocosm models of human systems from narrative accounts and illustrate how systems work together (or do not) to meet a goal. Ethnographic grounded theory helps to create a narrative about a culture while
approaching the microcosms in day-to-day routines. This macro and micro view both helped me to answer my research questions.

Research Questions and Answers

What happens during the first years of 1:1 computing when a Bais Yaakov school adopts Chromebooks?

Schachter High School adopted 1:1 Chromebook technology in order to “prepare students to be 21st century learners” (Marianne, Interview, February 24, 2015). However, the school’s goal and vision of how and when the technology should be used in various content areas was unclear. Teachers, administrators, parents, and students had varying levels of interest, knowledge, and skills in using the technology in academic or other constructive ways. Without a shared vision of “21st century learning”, the school community was paralyzed by conflicting independent definitions of technology integration and limited access to online resources at home and at school.

As part of a larger Ultra-Orthodox community that values Jewish halacha, or rules, the Schachter School Bais Yaakov community defined itself by its strict adherence to rules dictated by religion (halacha) and rules dictated by the administration. Many of the school rules were in place because of the administration’s interpretation of religious practices (e.g. length of skirt, hair pulled back, no talking to boys, etc.). It is probable there were some religious tensions between staff, students, and families of varying levels of belief and observance; however, the tensions that are of interest to this dissertation are the tensions concerning technology.

When faced with a decision to purchase digital devices for students, the administration decided to adopt Internet-dependent Chromebooks. This was an
interesting choice because the Chromebook, unlike other laptops, needed an Internet connection to access word processing, spreadsheet, and presentation applications, and the Internet was regarded by the Ultra Orthodox Jewish community as an unsafe space for modest, observant Jewish women and men. Despite the inherent tension between the device and religious norms, the administration purchased the Chromebooks and created a filtering system that strictly limited the type of websites and activities students and teachers could access.

**How do stakeholders (students, teachers, parents and administrators) at a Bais Yaakov school approach teaching and learning with technology during the first years of Chromebook adoption?**

This tension between being a Torah observant Jew and a 21st century citizen is apparent throughout the data, and because it is not officially addressed by the administration of the school, teachers either ignore the technology or are insensitive to the religious implications of the Internet. Thus, there was a type of teacher divide in terms of how they addressed technology. For example, a Judaics teacher chose not to use the Chromebooks at all in her instruction. The Science teacher, not fully aware of the religious restrictions regarding modesty, posted videos and offered students open access to the Internet using her own cell phone.

However, students found new ways of using the technology. For example, the Chromebooks were used for photo storing and sharing, and students used mobile phones as an unrestricted device to communicate with each other. Students also appreciated the cloud aspect of the Google applications. A student could begin an essay at school and
Why do they approach teaching and learning with technology the way they do?

There was not a shared vision for the technology implementation at SHS. At the beginning of the 2014-2015 school year, when the Chromebooks were initially introduced, the professional development did not align to the cultural norms of the school context. For example, the professional development instructor used pop culture references that had no meaning to the Orthodox Jewish faculty, and she introduced web-based tools that were inappropriate for Bais Yaakov students. The professional development was not customized for the unique culture of the school, including the stringent filtering system for the Internet.

Stakeholders shared varying beliefs regarding technology and its place in education. Some participants liked technology and felt comfortable with its use in the classroom. Other participants explained that technology was “hype” and it did not need to be in a classroom in order for a student to gain an excellent education. Multiple teacher participants admitted their fear of technology, and some teachers rationalized their nonuse of technology because they felt technology use wasted time.

How do religion and culture influence the use of technology?

Schachter High School avoided widespread technology due to cultural and religious reasons. In the Ultra-Orthodox community, there is distrust of the widespread use of the Internet. To align with the larger community’s value system, the school used a whitelist to ensure the safety of the Internet. A whitelist filtering system blocks all
websites except for those that are on the whitelist. Teachers and students had the opportunity to add sites to the approved list by submitting them in writing to the Rabbi who was in charge of administration of the whitelist. It took 24 hours for each site to be included, if it was deemed appropriate, to the whitelist.

Besides the whitelist, there were other ways that religion and culture influenced the use of technology. Modesty was a pillar of the behavior of the students. The dress code enforced modesty principles, as did the ways in which the technology was used. Students were not allowed to perform in front of men. This included signing, dancing, and in some cases, public speaking. A video or an audio recording of a student that had the potential to be shared on the Internet for a worldwide audience, including men, were considered immodest. Likewise, 21st century skills that include performance, public speaking, and collaboration were not necessarily aligned to the religious standards of modesty that were associated with a Bais Yaakov environment.

**Discussion of Findings**

*Shared technology vision: Getting everyone on the same page.* In both the activity systems analysis and the thematic analysis, a shared technology vision was absent. Administrators and teachers knew that they needed to use technology, but they were unclear, especially given the boundaries of the Internet, how to integrate the technology. As a result, technologies were used as “replacements” (Weston & Bain, 2010, p. 10). Online forms replaced worksheets, websites replaced research texts, and typed essays replaced handwritten assignments. Weston and Bain explained that these replacements “do not address the core activity of teaching and learning. Each merely automates the practices of the prevailing paradigm (a) non-differentiated large-group
instruction, (b) access to information in classrooms, (c) non-engagement of parents, and (d) summative assessment of performance” (Weston & Bain, 2010, p. 10).

A shared technology vision is a clear understanding of how technology can and should be used within the confines of the cultural and religious practices of the school community. A vision is, “a stated goal that provides direction” (Bainbridge, 2007, p. 2). The school lacked direction in their implementation of the Chromebooks. A vision that is created with stakeholders and shared would be a helpful addition to the future use and integration of the Chromebooks at SHS.

One possible dilemma with creating a shared vision could be that there are not models of technology-rich schools in the Ultra-Orthodox community. Technology is often regarded as dangerous, and the Torah Umesorah website (www.torahumesorah.org), a support community for Bais Yaakov schools, has a banner at the top of the website that reads, “The Vaad Roshei Yeshiva of Torah Umesorah urge all those who use the internet to do so only with a filter in place.” This type of statement would probably be absent on state education websites, and it definitely would not be presented at a space of alert, the top banner of a webpage. “All those who use the internet” implies that not all Torah Umesorah schools even use the Internet (but obviously, if a school can access the website, they are using the Internet). This serves as a reminder that Schachter High School does not represent all Bais Yaakov community schools. However, it can be inferred that it is one of the more progressive schools because of their recent adventure into the realm of technology integration.
Professional development: A necessary prologue. Technology professional development in the school was not aligned to the unique culture of the community. One-time, four-hour sessions are common in school staff development programming, but they are not necessarily effective (Borko, 2004; Schrum, 1999). The technology professional development at SHS was one-time, and it did not address the multiple levels of technology expertise within the audience. This is common in technology professional development, although research recommends on-going sessions specifically tailored to learners (Duran, Brunvand, Ellsworth, & Sendag, 2012; Gunn & Hollingsworth, 2013; Schrum, 1999). Cost and convenience determined SHS’s choice in technology professional development, although participants deemed the session as a waste of time. School-wide adoptions of new technology require more focus on innovative methods of teaching (i.e. problem based learning, cooperative learning, differentiation) than focus on technology tools (Weston & Bain, 2010). However, when most of the faculty did not know how to turn on the Chromebooks at the beginning of the year, there needs to be some system set in place to allow teachers to get the technical support they desperately need in order to use the purchased device. The data aligns with other researchers who describe the necessity for personalized, on-going, and just-in-time technology integration professional development (Borko, 2004; Gilakjani, 2013; Pittman & Gaines, 2015; Schrum, 1999).

The “digital disconnect.” In 2002, Levin and Arafah surveyed 200 secondary students about their Internet use at home and at school. They found that students use the Internet for school-related purposes at home, but
The vast majority of students from whom we collected data say their use of the Internet at school is altogether another matter. While students do indeed rely on the Internet to complete their schoolwork and manage their day-to-day educational activities, they say their Internet use occurs mostly outside of the school day, outside of the school building, outside of the direction of their teachers (Levin & Arafeh, 2002, p. 14).

This was 2002. They called this phenomenon the “digital disconnect” (Levin & Arafeh, 2002, p. 14). This disconnect sounds strikingly similar to the ways in which students used the Internet in 2016 at Schachter High School. Students, due to the restrictions on the Internet access, found it difficult to complete assignments at school. Instead, they elected to complete their Internet-based assignments at home (if Internet was available) or somewhere else with no supervision and no filters, like Starbucks. This aligns with other studies where students, without reliable Internet at school, found alternative locations to complete assignments (Dolan, 2016; Ono & Tsai, 2008). Students also used technology outside of school (i.e. WhatsApp) for communicating with classmates and organizing school activities.

*Filters: Share the power.* Filters on the school network limited the type of access available to students. The system Schachter High School used was a whitelist, where only pre-approved websites were available for access. Even though SHS had more strict regulations than other schools, filters and firewalls are problematic to technology use and integration across the board (Bell, 2016; Dolan, 2016; Melgosa & Scott, 2013). They “severely limit students’ and teachers’ ability to complete their work, or the ability to
access needed or desired sites” (Dolan, 2016, p. 30). Because of the difficulty with using websites impromptu, website integration was eliminated altogether.

On the other hand, strict filters allowed for technology use where it would not have been possible before. Without the whitelist system, the school administration would not have felt comfortable giving students devices to use at their own discretion throughout the school day. The staff’s perceptions of students as irresponsible and uninformed Internet users are similar to findings on weak student information technology skills (Admiraal, 2015; Klomsri & Tedre, 2016). Explicit information technology skill instruction is often offered as a remedy to students’ lack of readiness (Klomsri & Tedre, 2016; Melgosa & Scott, 2013).

There is another approach to help teachers use websites in their daily instruction. Teachers themselves can have access to the whitelist system. Mary Ann Bell discussed a proposal such as this,

In many schools, the override process is overly burdensome and the time delay interferes with the effective use of such material for educational purposes. Ideally, all district library media specialists, computer lab personnel and teachers who make significant use of the Internet should have the authority to override the filter (2016, p. 11).

With experienced teachers allowed to make discretionary adjustments to the whitelist, there is a potential for more user-friendly accessibility within the school building.

Subject specific use. At SHS, each teacher’s classroom was a self-contained space where only that subject’s world existed. This could be due to the self-contained nature of each teacher; teachers were only required to be at school during the hours of
their assigned class times and there was little collaboration between academic subjects. This aligns with Goodson and Mangan’s statement, “Each subject in the secondary school is a separate microcosm, a micro-world with varying values and traditions” (1995, p. 615). Each of these subject-areas dealt with teaching and learning differently, and, as a result, integrated technology differently. This technology use can be attributed to the traditional subject-area pedagogical norms and the beliefs of the instructors of those subjects (Goodson & Mangan, 1995; Hennessy, Ruthven, & Brindley, 2005; Howard, Chan, Mozejko, & Caputi, 2015).

Research describes Language arts teachers as more likely to adopt technology integration practices because of their beliefs of usefulness of the tools (Howard, Chan, & Caputi, 2015a). This aligns with the findings of my study. The Language Arts teacher used technology most frequently including weekly essays and cloud-enabled editing. Also, math teachers were reluctant to have students use Chromebooks in their classrooms. This is similar other research findings (Howard, Chan, et al., 2015a).

**Implications of Findings**

Digital divide literature traditionally defines the digital divide as a binary difference in access between the “haves” and “have-nots” (Dolan, 2016; Gorski, 2002; Hargittai, 2010). Digital divide research often calls for a broadened definition of the digital divide phenomenon due to the widespread physical access of technology (Badran, 2014; Dolan, 2016; Van Volkom, Stapley, & Amaturo, 2014). It is not enough just to have a device; the user must be able to use the device for creative, innovative purpose. The new definition would include the differences in uses of technology, student “creators” rather than “consumers” (Dolan, 2016; Ritzhaupt et al., 2013). Again, with this type of
digital divide definition, race and socio-economic status are factors that describe those with less innovative uses of technology in school (Hargittai, 2010). However, lack of digital support was the case at Schachter High School. The same hurdles (i.e. lack of technology support, absent vision, disconnect between home use and school use) that are evident in low SES schools are emergent at SHS (Chen, 2015; Ritzhaupt et al., 2013).

With these descriptions, Schachter High School could be positioned on the extreme end of the digital divide, lacking the digital access that is ubiquitous in other schools. However, the term, “digital divide” invokes an agenda of social justice, one that includes a call-to-action and a plan for change. The prevailing culture at Schachter High School does not allow for widespread Internet use, and there is not any plan for that in the future. In other words, in the Schachter High School Bais Yaakov community, they embrace that they are digitally divided from others. This calls for different terminology that showcases the deliberate rejection of certain technologies and the activities that align with those technologies. I suggest the term *media refusal*.

Media refusal is “a discursive move that entails more than simply not using something – it’s a kind of conscious disavowal that involves the recognition that non-use signifies something socially or politically meaningful about the non-user” (Portwood-Stacer, 2013, p. 1042). The restrictions that Schachter High School imposes on its teachers and students are a media refusal due to religious (social) beliefs. While media refusal is often used by individuals to “send a message” to others (i.e. deleting a Facebook account), it could also be a way to discern oneself from others (Portwood-Stacer, 2013, p. 1043). This discernment is a common theme in Orthodox Jewish values. For example, dress codes of modesty help to differentiate Jews from secular communities.
(Gorsetman & Sztokman, 2013). This media refusal maintains a separation from the secular world, thus further insulating the Orthodox Jewish community from the broader community of technology consumers.

It is possible that the global connections available to 21st century learners are not a valuable commodity to the Bais Yaakov community due to the associated danger with access to the Internet. It is also possible that the best technology practices for a Bais Yaakov high school are limited access to research opportunities. Thus, the way that technology is used (or not used) in Schachter High School is more related to a deliberate media refusal than an unintentional digital divide.

In May of 2016, The Forward, a Jewish news source since 1897, published an article about two Bais Yaakov students rapping in an online video. The title of the article was, “Weirdly Talented Rapping Orthodox Girls Star in Illicit Viral Hit,” and the video itself was of two Bais Yaakov students, rapping in front of lockers about a genetic testing service. The author explained that the video emerged from “the dark net of Orthodox WhatsApp groups” (Nathan-Kazis, 2016). Since the video was leaked, a representative of Dor Yeshorim, the genetic testing service, spoke publicly about how “disturbed” the organization was with the video (Nathan-Kazis, 2016).

The questionable video was similar to products created by public school students for classroom content mastery. Anyone can perform a quick search of YouTube and can find thousands of videos of students rapping about subject area content. The reason the “Weirdly Talented” video was controversial was the context of a Bais Yaakov school with Bais Yaakov students. It was considered immodest for women to perform in front of men, and as this video was shared more globally, it was as if the students were
performing in front of men. Before I came across the article, I did not realize the level of shame that was put upon those students for doing something that I, as an outsider of the Bais Yaakov community, felt was benign, and actually an excellent example of a learning product. This type of learning product was out of the question for modesty reasons, so now I question what are appropriate, student-centered, meaningful ways of using technology in a Bais Yaakov environment.

The other interesting part about this video was that the video was not initially shared on a video sharing website. It was texted through WhatsApp. This WhatsApp texting app came across in my data collection as a way for student groups to keep in touch with each other quickly. It is probable that the students at SHS also share videos and pictures with each other, and they assume they are going to be kept within the group, as did the girls in the video. The importance of teaching students digital citizenship and safety, specifically in this context, is great. The ramifications of omitting this subject from the curriculum could be dire.

**Limitations and Suggestions for Future Research**

One limitation of this study was the method of data collected. Interview data was limited by what participants shared, and observation data was limited by what I was able to observe. This study was also limited by the amount of time I spent at my research site. I started collecting data in the summer of 2014, and I officially ended data collection in March of 2016. I was not at the school observing every single day during these two years, and I am sure that I missed observing ways of technology use that are not described in this paper.
Another limitation of this study was that I was observing only one school’s context. I suggest that future research be designed to explore school communities that chose to avoid technology for pedagogical reasons. These schools may or may not be religious, but I think it would be interesting to learn more about schools that deliberately refuse technology for academic uses.

Through this research, I learned of students using technology in ways that were not officially sanctioned by the school. This third space of activity—not academic and not entirely social—was a safe space where students could consume a technology for a purpose other than what it was originally intended, for example, using the Chromebooks for photo sharing. This is similar to the third space that Morgan (2010) and Olson (2016) discussed in their research. In this third space, students begin to redefine a technology and repurpose it for ways that are most suitable for their own needs. More research in needed in this area.

After I concluded data collection, the school found a technology curriculum that was endorsed by a well known rabbi, Rabbi Brudny in Brooklyn, New York. The administrators asked me to take a look at the curriculum outline and offer advice on whether or not the school should adopt the curriculum. The curriculum was created specifically for Bais Yaakov schools, and the goal of the program is to “explore the ways in which technology contradicts basic Torah values and impedes the growth and development of a person’s character” (Zelcer, 2016).

Throughout the curriculum, there were lessons describing human relationships with technology including addiction, impulsivity, instant gratification and desensitization. Specifically, the first session included activities explaining the importance of silence and
how technology seems to fill downtime in our lives. In each module, the author included research to help ground her points in science. While some statements within the curriculum outline were broad generalizations that made me grimace (i.e. technology wastes time instead of saving it), I found that most of the content was clear and notably absent from most school technology curriculums. If schools continue to trend toward technology use, a curriculum describing human relationships with technology could be helpful as part of a digital literacy cannon. ISTE does not include human/technology relationships in standards for teachers, administrators, or students. Mental health researchers have explored the emotional relationships users have with and using technology (Belangee, Bluvshtein, & Haugen, 2015). These mental health issues such as desensitization and disinhibition are important skills for adolescents and should be a part of technology curriculums. This line of research would also be interesting as more schools embrace this trend in teaching and learning.

Teacher buy-in is necessary for technology to be used in the classroom (Howard, Chan, & Caputi, 2015b; Hsu, 2016; Judson, 2006; Kim, Kim, Lee, Spector, & DeMeester, 2013). Judaics teachers and math teachers explicitly shared their beliefs that using technology in the classroom was not for them or their subject matter. This is similar to the research findings in Howard, Chan, et al. (2015a) where teachers of Language Arts and Social Studies found integrating technology into their classrooms more natural than math teachers. Dorfman (2016) also found that music teachers felt that integrating technology into their content area was a challenge. Similar to content-specific uses of technology, the Bais Yaakov movement has unique challenges regarding content taught and methods for teaching that content. For example, the Bais Yaakov movement does not
allow for singing or performing in front of men, it is difficult for Bais Yaakov schools to allow teachers to assign projects for students that have them recording themselves. It would be interesting to explore alternative methods of student-centered performance.

Instructional design researchers (e.g. Kinuthia, 2009; Rogers, Graham, & Mayes, 2007; Starr-Glass, 2013; Tracey & Unger, 2012; Young, 2008) have urged about the importance of culture in the design of instructional systems and human-computer interaction. Culturally relevant teaching (Banks et al., 2001; Gay, 2010; Ladson-Billings, 1995) refers to the need for K-12 educators to tailor instruction that is congruent to the cultural backgrounds of the students they teach. Some researchers (Eugene et al., 2009; Leonard, Davis, & Sidler, 2005; Rowe & Miller, 2016) have explored the intersection of technology and K12 education and urged for emphasis on culture when designing instruction. This study associates most closely with this line of research, and more research in this area is needed.

It is imperative, as K12 schools continue to educate a more diverse community, to explore the ways in which technology and culture are addressed in the curriculum. From this dissertation, it is important to remember that technology integration is not a neutral topic that is inherently associated with a 21st century classroom experience. Technology integration itself can be culturally marginalizing, and as educators and researchers, we need to explore new ways in which we address technology integration to be inclusive to all communities.
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## APPENDICES

### Appendix A. Initial codes and definitions.

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describing</td>
<td>When participant gives details about her life including age, background, etc.</td>
</tr>
<tr>
<td>Choosing career path</td>
<td>Sharing future plans about career choices</td>
</tr>
<tr>
<td>Choosing family life over career</td>
<td>Sharing future or past plans about adult career choices, making choices based on wanting to be a stay at home mom or too many years of schooling</td>
</tr>
<tr>
<td>Owning a phone</td>
<td>Describes owning a phone and others in household</td>
</tr>
<tr>
<td>Waiting for a phone</td>
<td>Describes wanting a phone and having to wait to get it until parents approved</td>
</tr>
<tr>
<td>Explaining technology expertise</td>
<td>Describing if they are &quot;good&quot; at technology or not. &quot;It's hard for me&quot; or &quot;I just do it&quot; are examples of comments that are a part of this category.</td>
</tr>
<tr>
<td>Giving Father praise for being tech-savvy</td>
<td>Describing the father/husband as good at technology</td>
</tr>
<tr>
<td>Comparing tech expertise with others</td>
<td>Comparing participant technology knowledge with others, explaining that &quot;I do not get how people do not know how to do X&quot; or &quot;I cannot do this, but you could&quot;</td>
</tr>
<tr>
<td>Using technology in school</td>
<td>Explaining how technology is used, can be used, was used in school or for outside of school projects. Technology includes smartboards, tablets, computers (including Chromebooks)</td>
</tr>
<tr>
<td>Defining technology</td>
<td>How a participant defines technology</td>
</tr>
<tr>
<td>Using Chromebooks</td>
<td>Explaining how Chromebooks are used, could be used, in school</td>
</tr>
<tr>
<td>Getting Chromebook</td>
<td>Physically being able to retrieve Chromebook from carts in school</td>
</tr>
<tr>
<td>Taking class online</td>
<td>Mentioning students who take class online</td>
</tr>
<tr>
<td>Typing on Chromebook</td>
<td>Describing using the Chromebook for typing, writing in</td>
</tr>
<tr>
<td>Activity</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Using Chromebooks in class</td>
<td></td>
</tr>
<tr>
<td>Hearing about the Chromebooks</td>
<td>When the participant talks about the Chromebooks before they were at the school-- and explains when they &quot;heard&quot; about them</td>
</tr>
<tr>
<td>Feelings about technology</td>
<td>When the participant expresses judgement about technology-- it is &quot;good&quot; or &quot;bad&quot; or people who use technology are &quot;X&quot; or the use of Smartboards is &quot;helpful&quot;-- these could be beliefs</td>
</tr>
<tr>
<td>Thinking of options for Chromebooks</td>
<td>When the participant gives suggestions for the use of the Chromebooks</td>
</tr>
<tr>
<td>Describing apps</td>
<td>Any mention of apps that students could use on the Chromebook, does not have to be specific</td>
</tr>
<tr>
<td>Describing teachers</td>
<td>When a participant describes teachers in general-- either their pedagogy, their beliefs, their technology knowledge, etc.</td>
</tr>
<tr>
<td>Explaining teacher pedagogy</td>
<td>Either describing their own or another's feelings about teaching-- does not need to include technology.</td>
</tr>
<tr>
<td>Training on Chromebooks</td>
<td>Any reference to training on the Chromebook-- either needing to have training or training that has already happened</td>
</tr>
<tr>
<td>Using Chromebooks on own terms</td>
<td>Referencing being able to get the Chromebook whenever the student wants it-- using it for non-school related purposes, using it when the student feels it is necessary</td>
</tr>
<tr>
<td>Collaborating with other students</td>
<td>Referencing sharing content on the computer through the Internet</td>
</tr>
<tr>
<td>Googling</td>
<td>Describing the ways in which they research, also anytime they reference Google</td>
</tr>
<tr>
<td>Working around rules</td>
<td>Describing &quot;hacks&quot; to work around the rules set in place</td>
</tr>
<tr>
<td>Activity</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Researching</td>
<td>Finding outside information on a particular topic--mostly this is using the computer for research, but it also includes other methods of research such as going to the library</td>
</tr>
<tr>
<td>Moonlighting</td>
<td>Teachers or admins describing the other jobs they have besides teaching at Temima</td>
</tr>
<tr>
<td>Working hard</td>
<td>Describing the amount of time put into a task</td>
</tr>
<tr>
<td>Working for money</td>
<td>Describing how getting paid for doing something</td>
</tr>
<tr>
<td>Getting paid for passion</td>
<td>Describing how getting paid for doing something you love</td>
</tr>
<tr>
<td>Davening</td>
<td>Praying, either formally or independently</td>
</tr>
<tr>
<td>Describing time it takes to do her job</td>
<td>Describing time, either not having enough or having a task take a long time</td>
</tr>
<tr>
<td>Having trouble with technology</td>
<td>Describing how the technology does not work in the way the user wants</td>
</tr>
<tr>
<td>Having trouble with passwords</td>
<td>Describing how the user has trouble with remembering and using passwords</td>
</tr>
<tr>
<td>Getting technology help</td>
<td>Describing how when there was a technology problem, the user got assistance</td>
</tr>
<tr>
<td>Taking Attendance</td>
<td>Mentions using the computer to take attendance</td>
</tr>
<tr>
<td>Using the computer for email</td>
<td>Mentions using the computer for email</td>
</tr>
<tr>
<td>Creating limits for technology</td>
<td>Describes the filtering system or restricted computer use either for self or others</td>
</tr>
<tr>
<td>Using technology for personal use</td>
<td>Using technology at home for things not related to school activities</td>
</tr>
<tr>
<td>Using Apple products</td>
<td>Mentioning Apple products</td>
</tr>
<tr>
<td>Describing schooling history</td>
<td>Participant describes the type of schooling she/he has had in the past</td>
</tr>
<tr>
<td>Using technology as an incentive</td>
<td>Using technology as a reward for students</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Using Smart Boards</td>
<td>Any mention of the Smartboard for instruction</td>
</tr>
<tr>
<td>Using a computer lab</td>
<td>Any mention of a computer lab</td>
</tr>
<tr>
<td>Working on Yearbook on computers</td>
<td>Mentioning using the Chromebooks for Yearbook</td>
</tr>
<tr>
<td>Watching videos on computer</td>
<td>Mentioning watching videos using the Chromebooks</td>
</tr>
<tr>
<td>Using Google Apps</td>
<td>Describing or calling out Google Apps by name</td>
</tr>
<tr>
<td>Getting feedback on writing</td>
<td>Describing ways in which the user can get feedback on writing (does not have to be on the computer)</td>
</tr>
<tr>
<td>Feeling frustrated with technology</td>
<td>Using words like &quot;annoyed&quot;</td>
</tr>
<tr>
<td>Wasting time</td>
<td>Describing how the user is &quot;wasting time&quot;</td>
</tr>
<tr>
<td>grading</td>
<td>Explains teachers who use Chromebooks for grading purposes</td>
</tr>
<tr>
<td>Sharing slideshows</td>
<td>Where one person shares a slideshow with the rest of the class instead of using a projector</td>
</tr>
<tr>
<td>Writing reports</td>
<td>Describing writing</td>
</tr>
<tr>
<td>Using Chromebooks for photos</td>
<td>Using the Chromebook for saving, organizing, and showing pictures</td>
</tr>
<tr>
<td>Blocking a music app</td>
<td>Blocking a music app on the Chromebook</td>
</tr>
<tr>
<td>Using Chromebooks for music</td>
<td>Wanting to use Chromebooks for music</td>
</tr>
<tr>
<td>Using Chromebooks in Math</td>
<td>Describing how Chromebooks could be used in math</td>
</tr>
<tr>
<td>Using Chromebooks in Hebrew</td>
<td>Describing how Chromebooks are used in Hebrew classes</td>
</tr>
<tr>
<td>Trusting students</td>
<td>Describing how students can or cannot be trusted to make wise decisions in surfing the Internet</td>
</tr>
<tr>
<td>Cutting edge</td>
<td>&quot;Cutting edge&quot; wanting students to be on the forefront</td>
</tr>
<tr>
<td>Topic</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Dealing with the outside world.</td>
<td>References to anything that is outside of the culture of the community-- anything not Orthodox Jewish</td>
</tr>
<tr>
<td>Preparing students for after graduation</td>
<td>Preparing students for careers/life after graduation</td>
</tr>
<tr>
<td>Improving learning</td>
<td>Describing the desire to improve learning at the school</td>
</tr>
<tr>
<td>Comparing students of today with students of the past</td>
<td>Comparing students of today to those students of the past-- there is a change in the times</td>
</tr>
<tr>
<td>Using technology for critical thinking</td>
<td>Using technology for critical thinking, connectivity</td>
</tr>
<tr>
<td>Using technology as a gimmick</td>
<td>The opposite of using technology for critical thinking-- using as an incentive, as &quot;tech for tech sake&quot;</td>
</tr>
<tr>
<td>Knowing Science to be a Torah Jew</td>
<td>Understanding Science as a religious Jew as an important pillar</td>
</tr>
<tr>
<td>Keeping students safe</td>
<td>Keeping students safe on the Internet</td>
</tr>
<tr>
<td>Opening the Internet</td>
<td>Removing limits on technology</td>
</tr>
<tr>
<td>Feelings about students</td>
<td>Describing characteristics of students</td>
</tr>
<tr>
<td>Giving students a foundation</td>
<td>teaching students the basics of how to use technology appropriately</td>
</tr>
<tr>
<td>Using technology at home</td>
<td>any discussion of how a user uses the Internet/computer/technology outside of school</td>
</tr>
<tr>
<td>Making choices</td>
<td>Teaching students how to make choices</td>
</tr>
<tr>
<td>Using technology responsibly</td>
<td>teaching students how to use technology responsibly</td>
</tr>
<tr>
<td>Using a mouse</td>
<td>Describing the need to use a mouse with a laptop</td>
</tr>
<tr>
<td>Comparing tech expertise with a man</td>
<td>Comparing tech expertise with a man</td>
</tr>
<tr>
<td>Using old equipment</td>
<td>Describing using old computer equipment and how it is not desirable</td>
</tr>
<tr>
<td>Buying new technology</td>
<td>Describing buying and the cost of new computer</td>
</tr>
<tr>
<td></td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>equipment</td>
<td></td>
</tr>
<tr>
<td>Courting danger</td>
<td>in vivo-- &quot;courting danger&quot;</td>
</tr>
<tr>
<td>Access to internet at home</td>
<td>describing the type of access students have to the internet at home-- also includes types of filters, access, etc.</td>
</tr>
<tr>
<td>Whitelisting sites</td>
<td>creating a whitelist</td>
</tr>
<tr>
<td>Using technology in math</td>
<td>using technology (chromebook or smartboard or calculator) in math</td>
</tr>
<tr>
<td>NOT using technology enough</td>
<td>belief that teachers are not using technology enough</td>
</tr>
<tr>
<td>Using Chromebooks in Language Arts</td>
<td>Using the Chromebooks in language arts</td>
</tr>
<tr>
<td>Wanting teacher to be more creative</td>
<td>Saying that a certain teacher should be more creative</td>
</tr>
<tr>
<td>Using technology in History</td>
<td>Using technology in History</td>
</tr>
<tr>
<td>Using technology in Judaics</td>
<td>Using technology in Judaics</td>
</tr>
<tr>
<td>Using technology to rearrange text</td>
<td>Using technology to rearrange text</td>
</tr>
<tr>
<td>Using technology in creative ways</td>
<td>Using technology in creative ways</td>
</tr>
<tr>
<td>Wanting help with technology</td>
<td>Wanting more training in technology</td>
</tr>
<tr>
<td>Busy with other things</td>
<td>Busy with things other than technology-- does not care enough to put effort into learning, etc.</td>
</tr>
<tr>
<td>Using technology to write</td>
<td>Writing on the computer-- probably using word processing software</td>
</tr>
<tr>
<td>Not having enough time to learn how to use technology</td>
<td>not having enough time to learn how to use technology</td>
</tr>
<tr>
<td>Going to seminary</td>
<td>describing how many girls go to seminary after graduation</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Going to college</td>
<td>describing girls that go to college after seminary</td>
</tr>
<tr>
<td>taking notes on</td>
<td>Taking notes on Chromebooks</td>
</tr>
<tr>
<td>chromebooks</td>
<td></td>
</tr>
<tr>
<td>Taking out the kinks</td>
<td>Talking about the transition to using the Chromebooks</td>
</tr>
<tr>
<td>Using the computer as a calculator</td>
<td>Using the computer as a calculator</td>
</tr>
<tr>
<td>Pushing teachers to use more technology</td>
<td>Admitting that teachers do not use enough technology and would like to see more technology use in the classroom</td>
</tr>
<tr>
<td>Accessing websites</td>
<td>How stakeholders access websites. Discussion could include how a stakeholder cannot access blocked sites or making sure that stakeholders cannot access those sites.</td>
</tr>
</tbody>
</table>
Appendix B. List of Courses at Schachter High School.

<table>
<thead>
<tr>
<th>Course</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra I</td>
<td>Halacha 12</td>
</tr>
<tr>
<td>Algebra II</td>
<td>Halacha 9</td>
</tr>
<tr>
<td>Algebra IIB</td>
<td>Health</td>
</tr>
<tr>
<td>Algebra III</td>
<td>Honors Geometry</td>
</tr>
<tr>
<td>American History</td>
<td>Ivrit</td>
</tr>
<tr>
<td>Anatomy</td>
<td>Ivrit II</td>
</tr>
<tr>
<td>AP Language Arts</td>
<td>Ivrit IIB</td>
</tr>
<tr>
<td>Applied Algebra 10</td>
<td>Ivrit IIIA</td>
</tr>
<tr>
<td>Applied Algebra 9</td>
<td>Ivrit IIIB</td>
</tr>
<tr>
<td>B’kius 10</td>
<td>Ivrit IV</td>
</tr>
<tr>
<td>B’kius 11</td>
<td>Ivrit V</td>
</tr>
<tr>
<td>B’kius 12</td>
<td>Jewish History 11</td>
</tr>
<tr>
<td>B’kius 9</td>
<td>Language Arts 10</td>
</tr>
<tr>
<td>B’kius 9A</td>
<td>Language Arts 11</td>
</tr>
<tr>
<td>Biology</td>
<td>Language Arts 12</td>
</tr>
<tr>
<td>Biur Tfillah</td>
<td>Language Arts 9</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Machshava 12</td>
</tr>
<tr>
<td>Chumash 10</td>
<td>Megillos</td>
</tr>
<tr>
<td>Chumash 10A</td>
<td>Navi 10</td>
</tr>
<tr>
<td>Chumash 11</td>
<td>Navi 9</td>
</tr>
<tr>
<td>Chumash 11 Ivrit</td>
<td>P. Fitness I</td>
</tr>
<tr>
<td>Chumash 12</td>
<td>P. Fitness II</td>
</tr>
<tr>
<td>Chumash 9</td>
<td>Phys. Cond. I</td>
</tr>
<tr>
<td>Chumash 9A</td>
<td>Phys. Cond. II</td>
</tr>
<tr>
<td>Con. Chemistry</td>
<td>Physical Science</td>
</tr>
<tr>
<td>Consumer Economics</td>
<td>Physics</td>
</tr>
<tr>
<td>FOCUS 11</td>
<td>Seminar in Communal Issues</td>
</tr>
<tr>
<td>FOCUS 12</td>
<td>Sr. Internship</td>
</tr>
<tr>
<td>Foundations 10</td>
<td>Sr. Internship Government</td>
</tr>
<tr>
<td>Geometry</td>
<td>Sr. Internship Physical Science</td>
</tr>
<tr>
<td>Government</td>
<td>Sr. Internship World History</td>
</tr>
<tr>
<td>H. Language Arts 9</td>
<td>Tanach Review</td>
</tr>
<tr>
<td>H. Pre-Calculus</td>
<td>Trei Aser</td>
</tr>
<tr>
<td>Halacha 10</td>
<td>World History</td>
</tr>
<tr>
<td>Halacha 11</td>
<td></td>
</tr>
</tbody>
</table>