HARDWARE, SOFTWARE, AND "PEOPLEWARE": EDUCATIONAL TECHNOLOGY AND EMBEDDED STRUGGLES IN U.S. HIGH SCHOOLS

by

Randy Lynn

A Dissertation
Submitted to the
Graduate Faculty
of
George Mason University
in Partial Fulfillment of
The Requirements for the Degree
of
Doctor of Philosophy
Sociology

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Date: _____ Spring Semester 2016
George Mason University
Fairfax, VA

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DEDICATION

This is dedicated to my mom, whose dedication to helping teachers and students over the past two decades has inspired more than just this dissertation.

ACKNOWLEDGEMENTS

I used to think acknowledgements at the beginning of long publications such as these were nothing but pretentious performances of magnanimity: another couple hundred and scarcely relevant words from someone who's already bombarded their readers with too many of them. I now know that within every writer is a lot of fear, a lot of caffeine, a lot of petty complaints, and a lot of gaps in knowledge, all of which must be graciously attended to and tolerated by the wonderful, understanding people in their lives.

I'd like to thank my family, first and foremost, for their support and encouragement throughout my life—especially my parents, sister, and grandparents, whose love started me on this educational journey, and my fiancée, Mylynh, whose love sustained me during these final steps. I owe a debt of gratitude to the faculty and students of John F. Kennedy Catholic High School and St. Francis Borgia Regional High School, whose computers I fixed and whose struggles inspired this study several years ago—as well as the people at the pseudonymous schools I call Catholic Academy and Public High, for letting me bother them about their work so I could have an opportunity to come up with something insightful to say about it. I can't even begin to express how thankful I am for my professors, advisors, and mentors at the University of Missouri-St. Louis and George Mason University, who contributed so much to my development as a scholar. Robert Keel, Amy Best, and Jim Witte, in particular, are three of the busiest human beings I know, yet were so generous with their time to improve my scholarship over the years. They have been without a doubt the three most positive influences upon my professional development. I'm also very grateful for Hugh Gusterson and Kelly Schrum, who slogged through this whole interminable volume and provided incisive feedback.

Finally, I want to thank all my doctoral colleagues at GMU, especially those who have worked so hard to develop a student community there: Sara Moore, Jason Smith, Jeff Johnson, Vicki Hoverman, Abby Reiter, Marisa Allison, Katie Kerstetter, Sahar Haghighat, Josh Tuttle, Jean Boucher, Erin Stephens, and Carol Petty. Thank you for the laughs, the drinks, the gripe sessions, the collaborations, the brainstorming sessions, the conference-related heart attacks, and the endless discussions about what public sociology "is." I have no doubt that this list includes scholars and activists who will make an indelible impact on the world in the coming decades. Of all privileges from which I've benefitted, I count my association with you all to be among the most meaningful.

TABLE OF CONTENTS

ABSTRACT

HARDWARE, SOFTWARE, AND "PEOPLEWARE": EDUCATIONAL TECHNOLOGY AND EMBEDDED STRUGGLES IN U.S. HIGH SCHOOLS

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George Mason University, 2016

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This ethnographic study seeks to better understand the bounded and restricted engagement with educational technologies that prevails in many U.S. high schools, despite the widespread expectation since the 1980s that digital technologies will transform or revolutionize educational processes. I conducted a total of 73 interviews, focus groups, and observations with administrators, educational technology specialists, teachers, students, parents, and entrepreneurs affiliated with two suburban high schools in a major midwestern city: a public high school serving a mostly low-income, racially diverse student population, and an elite but financially struggling college preparatory academy attempting to stay afloat through a unique partnership with an educational technology startup company. Using these data, I explore the tangled, contentious relations comprising "the educational technology complex:" the field of adult stakeholders both internal and external to the school, alternately collaborating and competing with one

another to shape the uses of educational technology in schools to adhere to their own visions of what education should be. At least as important as any of the many biological, psychological, and pedagogical factors educators and students invoked to explain how and why technologies were used in their schools, I argue, are the broader political, economic, and social processes culminating in—and manifesting through—this field of adult stakeholders. I show how the implementation of educational technologies is a product of mutually constitutive processes of work, ideology, and technology, and I consider the implications of this study for researchers, policymakers, and educational practitioners.

CHAPTER ONE: INTRODUCTION

"So We're Here to Be Humiliated!"

The sun was beginning to rise as I drove into the parking lot of Catholic Academy, shrouding in pink its long, two-story, brick, main building to the east. It was a mild morning in mid-March, and the neatly manicured paths and yellow daffodils blooming in the first days of spring reminded me of similar mornings from my own youth, when the promise of impending summer freedom made my daily trek to school somewhat less onerous than it had been during the frigid winter months. Clutching a legal pad and the large coffee from Panera I had purchased to mitigate the stuporous effects of my 5:30 AM wakeup, I walked through a small courtyard at the front of the building to reach the main entrance, the air thick with the fetid aroma of newly fertilized mulch.

In the school, I met Rita, Catholic Academy's educational technology coordinator. Catholic Academy was a small, private high school in the outer suburbs of a major Midwestern city that frequently trumpeted its innovative uses of educational technology. All students leased a laptop from the school, and recently, Catholic Academy had decided to attempt an even more ambitious project: it would be partnering with an educational technology startup company named Lessonr to make a large number of instructional videos, which would be uploaded to Lessonr's library. During the previous week, the teachers at the school had made their first attempt at creating a short, five-minute instructional video. I was present to observe a series of professional development

workshops during which teachers would meet to view each other's videos, and receive feedback from Lessonr's staff.

Rita, a short woman in her mid-50s with black hair, was more animated than I at this early hour. But it quickly became apparent that much of this animation was nervous energy. Tensions were extremely high at the school. Catholic Academy was struggling financially, to the point that it could not even pay its teachers on time. The collaboration with Lessonr was, in part, an attempt to create a new source of revenue. But there was widespread disapproval of the collaboration among the faculty. Teachers had not been consulted about the collaboration, were skeptical of the "flipped classroom" pedagogical paradigm promoted by Lessonr, and resented the imposition of making dozens of instructional videos on top of their obligations to their current classes. Furthermore, the first meeting between the teachers and Miguel, Lessonr's founder and CEO, had been, in the words of one teacher, "pretty much a disaster." Teachers had come to regard Miguel as arrogant, condescending, and out of touch with the realities of their classrooms. He would be leading the workshops I had come to observe.

Rita, caught in the middle of this brewing maelstrom among administrators, teachers, and Lessonr, was doing her best to implement the administration's wishes while addressing the concerns of the teachers. "I'm a bit anxious," she confessed as she loaded a digital projector onto a cart and we began walking to the other side of the building, where the workshops would be held. She too did not have a high opinion of Miguel, describing her impression of him as "a bit of a used car salesman." But she believed Lessonr's model could have some pedagogical value if used appropriately. Her role at

this point was less to directly manage hardware and software, and more to manage the "peopleware," as she half-jokingly referred to the educators with whom she worked, striving as best as she could to pacify the volatile mix of egos, emotions, and interests at the school.

Arriving in the room where the workshops would be held, I met Miguel, the CEO of Lessonr. He was a man of Hispanic descent who appeared to be in his mid-fifties , wearing a blue collared dress shirt beneath a gray vest, and sporting a neatly trimmed beard flecked with gray and white patches. His mannerisms were very poised and fluid, giving an air of someone both thoughtful and at ease. He carried reading glasses, which he would prop on top of his head when not in use, or hold in his hand as he gesticulated to make a point. While Rita busied herself setting up the room for the workshops, Miguel described to me his successful background in digital technology businesses since the early 1990s. A board member at a local college, he was passionate about education, and had invested $500,000 of his own money to found Lessonr. "Everybody's always told me it can't be done," he said with a wave of his reading glasses, referring to the litany of business successes he had experienced, as well as his hopes for this new, ambitious project he hoped to grow with the help of Catholic Academy teachers.

Seating myself in a back corner, I watched throughout the day as teachers, in groups of two to six at a time, trudged into the room during their free periods to view the videos they had made. Miguel and his colleague Andrew—a younger man in his thirties, whose Lessonr business card identified as the company's "vice president of school relations"—led the sessions, proffering encouragement and suggestions for improvement

to the teachers. Show your face, so the students viewing the video can see you. Don't "over-tech" it. Speak naturally, just as you would in front of a live class. Don't exceed more than a few minutes in length. Be conscious of the lighting. Do a quick test before beginning to make sure the audio and video are working properly, and the camera height and distance is neither too close nor too far away.

Rita remained in the room during these sessions, at times seated with her own laptop, at other times seated next to a teacher helping them on their own laptop, and at still other times standing in the back with her arms crossed. Her demeanor reminded me of a helicopter parent supervising her children's play time, ever on the lookout for potential conflicts between the teachers and Lessonr staff to deescalate. At times, she interrupted Miguel or Andrew to either make an additional point or to soften a critique of a teacher's video. "Give us a month or so to get comfortable," she asserted at one point, after Andrew had exhorted a shy teacher to show his face in his videos. The teachers were not used to seeing and hearing themselves, and were hesitant to show too much of themselves, she explained. Becoming comfortable making these videos, she reminded the Lessonr staff, "isn't gonna happen overnight."

Between sessions, Miguel and Andrew were eager to speak with me about the enormous potential of educational technology. "I really believe—and this is a whole teaching philosophy thing—that technology isn't creeping slowly into education. It's taking over," Andrew told me. He went on to excitedly explain that, at the cost of 80 fewer fighter jets, the U.S. government "could give an iPad to every K-through-12 student in the country," rhapsodizing about the possible benefits of such an investment.

“We [Lessonr] are going to take over the textbook world,” Miguel declared. “Because who wants to carry them around?” Something “drastic” was needed in education, they insisted, because the educational system was failing to produce qualified and competent candidates for the job market. In their view, there was a great need for a dramatic restructuring of K-12 education to achieve this goal—a restructuring that would prominently feature innovations from educational technology companies such as Lessonr.

But the transformational zeal of Lessonr was not shared by Catholic Academy’s teachers. Although most teachers participated cordially in these professional development sessions, a palpable tension pervaded the workshops. When the sessions began, amicable chatter amongst themselves about the recent Academy Awards or the upcoming NCAA basketball tournament gave way to apprehensive silences and nervous laughter. Teachers were uncomfortable and self-deprecating regarding the quality of their own videos, with female teachers especially critical of their appearance and the sound of their voices. Once the videos of those in the room had been played, and Miguel began to play some exemplary videos created by teachers not in the room, the mood tended to lighten somewhat. But in other sessions, there were notable instances of conspicuous distress or resistance.

Prior to the first session, for example, a bulky middle-aged man with a buzzed haircut, a black athletic shirt, and tan pants strode into the room with furrowed eyebrows and a scowl on his face. He opened his laptop on his desk, and began fiddling with it intently. The school’s director of curriculum, seated next to him, responded to his entrance with concern, turning toward him and pinching her face sympathetically. “How

are you?" she asked. "Do you need anything? Besides alcohol?" The teacher didn't respond, remaining focused on his laptop. This teacher, I learned later, had had a speech impediment as a young man, and had found the process of making his video and listening to his voice excruciating.

In another session, a discussion arose regarding copyright restrictions, and whether or not it was acceptable for teachers to include content—such as textbooks or even other videos—in their own videos they were to make. Miguel suggested that it might be okay to use other content "as long as they're not logo-ed." His rationale was not that such use is legal, but that the teachers were unlikely to be caught, since the volume of online material made policing copyright violations an impossible feat. This suggestion that it might be okay to violate copyright laws caused multiple teachers at this Catholic school to sit up straighter and tighten their faces into a frown. Rita interjected to remark that copyright is "a complicated issue," and informed Miguel that how it would be handled at the school is "a discussion we're going to have to have as a faculty."

Teachers who had heard from students regarding the widespread use of instructional videos, meanwhile, informed Miguel that the students' initial response had been negative. "That's creepy, watching teachers [while] at home," one educator claimed a student had told him. Another teacher expressed her concern that making such one-size-fits-all videos "takes away personalization." "Lessonr doesn't want to replace you," Miguel replied with a smile. If anything, he argued, this transition would be beneficial for her and the other teachers, as recording and making available these videos in advance will "give you a head start on your class." The teacher responded that she had spent so

much time preparing for the video she had made that it had not saved her any time at all. Making the video, in fact, had been more time-consuming for her than if she had simply taught the content during classtime. “After five or six times, you’ll be more efficient,” Miguel assured her. “We [Lessonr] wouldn’t do this if we weren’t hearing the positives,” Andrew exclaimed. The flipped classroom instructional model, where it had been implemented successfully, he asserted, is “freeing [teachers] up to do what they love.”

Near the end of one of the sessions, a teacher who had been silent—and who apparently had not made a video, even though this had been required of all teachers—aired a concern that by having teachers make their own videos, they were essentially “reinventing the wheel.” He spoke from his own experience, talking about the textbooks that he used, and how these textbooks are supplemented by online content. On the publisher’s websites, he noted, are videos that he uses in his classes. “They are perfect,” he claimed. “So short and to the point.” Why, he asked, was he being asked to generate his own content, when he already had such strong content at his disposal that he had already used successfully?

Rita responded by telling him that “we would like you to know how to make a video,” and further suggested that if he felt that some content was widely available, perhaps that was a sign that he should begin by “[focusing] on videos that haven’t been done.” “I understand that...” he responded with a laugh, trailing off, as if to imply that his point about “reinventing the wheel” had yet to be addressed. He reiterated the point, bringing up a website, TeacherTube, of teacher videos that already exists: “There are tons of videos out there. You can just research and see what works, and copy what they do for

yours—which is, you know, [reinventing the wheel].” Miguel, also deflecting the point, seemed to interpret this teacher’s resistance as confusion about how to proceed, rather than a critique about the merits of having teachers make their own videos. “Give me a call, if you aren’t sure how to move forward,” he told the teacher, “and I’ll come sit with you as you make a video.”

A Spanish teacher named Nicolette, who attended the final session of the day, was the most outspoken critic of the video-making process. Rita had previously informed me that she had personally sat with Nicolette for two hours, helping her to make a video. This video, in fact, had been one of the best of the bunch: to teach the vocabulary for household chores (e.g., cooking, cleaning, mowing the lawn), Nicolette’s video featured a series of animated smiley faces performing the chores, asking the viewer to describe “¿Qué hace?” before narrating the answer in Spanish.

“There she is!” Rita exclaimed as Nicolette—an older teacher, apparently in her sixties, with short hair, glasses, a blue sweater complemented by a long, colorful scarf around her neck—entered. Miguel took the opportunity to show Nicolette the stylus, a pen that can be used to produce digital drawings, and suggest that she might use it in future videos that she makes. Nicolette replied in a loud voice, “The first thing I’m gonna do is re-record it—my voice is terrible! It’s about ten decibels too high!” Miguel and Rita both assured her that she had done a great job, and that the volume she believed to be “too loud” had actually made her voice very strong and clear. “So we’re here to be humiliated!” she exclaimed with a derisive chuckle. Apparently knowing who I was, she

turned and pointed at me as I sat at a desk with my notepad. “Take this down!” she bellowed. “I’m uncomfortable!”

Rita, after she had introduced the teachers at the beginning of the workshop, subsequently introduced me to everyone. Nicolette beamed broadly at me as Rita described me as a researcher who was observing the day’s professional development sessions. “He’s here to document the abuse!” Nicolette exclaimed. Miguel—perhaps conscious of the principal’s presence in the room, and eager to present the results of the experiment as a success—remarked in reply, gesturing to Nicolette, that “she’s been a star in all our sessions,” prompting an embarrassed facial expression and arm-waving gesture from Nicolette. Miguel then loaded Nicolette’s video, which generated a lot of delighted laughter at the animations, as well as a lot of reassuring, positive feedback from the other teachers.

“Where would you like me to draw?” Nicolette asked Miguel, when the video reached the part at which he had been encouraging her to use her stylus. Because she had incorporated several animations on one slide, Miguel suggested that as she described each animation, she might use the stylus to circle or emphasize the animation she was describing at a particular time. “No, no—I’m not pointing out those!” she exclaimed. “If you’d studied your vocab, you’d know!” Miguel didn’t respond to this directly, instead offering another round of positive feedback, telling her “it was clear, very easy to understand—it was good.”

After this workshop concluded, Rita—who described herself as “spent” but believed the workshops had gone “better than [she’d] expected”—and I returned to her

office on the other side of the building. As we stood in her office conversing, Rita leaned to the side to look beyond me into the hallway, and remarked that she had just observed another teacher (who had also attended the final session of the day) give Nicolette a hug. This clearly touched Rita, and she watched for a few seconds, smiling. Nicolette was one of the oldest teachers at the school, she told me, and among the least skilled with technology—but also among the most talented and passionate educators she had worked with. If my first day of fieldwork was any indication, Rita's job was as much about managing the strained social relations among teachers, administrators, and Lessonr as it was about improving pedagogy or implementing technology. It was also clear that helping teachers such as Nicolette to overcome their fears and discomforts was one of the main gratifications Rita derived from her work.

We walked down the hall together to Nicolette's classroom, where Rita reiterated her belief that Nicolette's video had been excellent. Nicolette shook her head and commanded me: "Write this word down: harassment!" She then inquired about my impressions of my first day of fieldwork at the school. "Are we interesting specimens?" she asked. I told her I was fascinated by what I had seen, and that I hoped I would see and talk to her again. She smiled warmly and welcomed me to the school.

Study Overview

Although this vignette describes only a few of the more notable events during my first day of fieldwork, it compellingly exhibits some of the most important themes engaged in this study.

The transformative potential of digital technologies in American K-12 education has been touted since the 1980s. But despite nearly forty years of public and private funding, innovating, and the sort of boundless optimism articulated to me on my first day of fieldwork by Miguel and Andrew, a new golden age in teaching and learning facilitated by digital technologies has yet to emerge. On the contrary, with the exception of a few unusually well-funded, innovative schools, the everyday reality at most schools, prominent educational technology scholar Neil Selwyn (2011:25) and others have concluded, remains "a largely bounded and restricted engagement with technology."

What accounts for this incongruence between expectation and reality? Why has over a quarter century of anticipated pedagogical revolution failed to materialize—and why, even after over a quarter century of more incremental and uneven transformations, is the pedagogical revolution enabled by digital technologies still believed by many to be right around the corner? What are the social processes—culminating in the school, but by no means entirely confined to it—that explain why digital technologies may be used in a "bounded and restricted" manner, but rarely in a manner that is more innovative or transformative? And why, even when such innovations are in fact implemented, are they likely to be contested and controversial?

I myself had previously worked for three years in the field of educational technology, and my interest in addressing these questions was my motivation for this dissertation project. I conducted a total of 52 interviews, 15 observations, and 6 focus groups with administrators, educational technology specialists, teachers, students, parents, and entrepreneurs affiliated with two suburban high schools in a major

midwestern city. One of these (Public High) is a public high school serving a mostly low-income, racially diverse student population, coping with the disruptions caused by ongoing construction at the school, strenuous standardized testing requirements, the recent introduction of Common Core curricula, and an overall lack of resources. The other (Catholic Academy) is an elite but financially struggling college preparatory academy: floundering in an oversaturated private school market, roiled by faculty discontents, and attempting to stay afloat through a unique partnership with an educational technology startup company.

As a result, my research focuses primarily upon an in-depth examination of what David Buckingham (2007:79) has called "the educational technology complex:" the field of adult stakeholders both internal and external to the school, alternately collaborating and competing with one another to shape the uses of educational technology in schools to adhere to their own visions of what education should be. It is a field of negotiation and struggle from which students are largely excluded, even though it has an enormous effect upon their classroom experiences. At least as important as any of the many biological, psychological, and pedagogical factors educators and students invoked to explain how and why technologies were used in their schools, I will argue, are the broader political, economic, and social processes culminating in—and manifesting through—this field of adult stakeholders who exercise influence over uses of educational technology in the classroom through their policies and practices.

Educational technology is a timely and consequential topic—yet a surprisingly understudied one in sociology. Communication scholars have long been fascinated with

the creative, agential uses of digital technologies embraced by young people (e.g., Buckingham 2008), but often emphasize their informal or "peer-based" learning rather than their interactions with the institutionalized processes occurring in the school (e.g., Ito et al. 2010). Regimented and often bland uses of digital technologies in educational settings, Selwyn (2011:9) observes in his review of the sociological literature, may appear at first glance to be a somewhat "underwhelming case study of the technological" compared to the more innovative uses that have transformed social tie maintenance (e.g., Lynn and Witte 2015) and mobilized political resistance under repressive regimes (e.g., Tufekci and Wilson 2012). He notes, furthermore, that the rich ethnographic tradition of data collection within schools (e.g, Willis 1977; Anyon 1980; Eckert 1989) is no longer as vibrant as in previous decades, as sociologists of education have increasingly "refocused their attentions away from the internal machinations of schools and schooling and turned instead toward a 'policy sociology' analysis of the dynamics of choice, diversity, and the implications of educational 'marketplaces' for equity" (p. 9). This has indeed been the case with neo-Marxian studies of education, although schools have in fact remained a common and compelling site of ethnographic inquiry especially for feminist scholars (e.g., Luttrell 1997; Best 2000; Pascoe 2007; Gordon 2010). But with few exceptions (e.g., Garrison and Bromley 2004), sociologists have not used qualitative methods to investigate implementations of educational technologies in schools.

This study addresses this gap in the sociological literature through a rigorous application of Dorothy Smith's (1987, 1999, 2004) method of institutional ethnography to the everyday worlds and social organization of the two schools studied. As with many

qualitative studies, the goal is less to make generalizable claims regarding the everyday realities of all American high schools at this historical moment and more to uncover the ways by which "the local is penetrated with the extra- or translocal relations that are [themselves] generalized across particular settings" (Smith 2004:42). In chapters that present the beliefs, claims, and experiences of educators, entrepreneurs, and students in turn, complex webs of social and institutional relations are uncovered, the directions and dynamics of which are indelibly shaped by broader societal trends in education, work, and inequalities of race, gender, class, and age.

In contrast to the peculiar deficit of sociological examinations, the topic of educational technologies is hotly debated in the contemporary public sphere. Embedded in discourses of fear and hope, problems and solutions, private and public governance, and the opportunities and challenges of this current era of rapid social and technological change, it is a topic that touches every parent and child, and has spawned a diverse array of experts, opinions, and commentaries. Rarely during these five years of describing the topic of my dissertation did I encounter an interlocutor who did not wish to learn more about this study, or proffer their own assessment of the perils and promises of educational technology. A few, having learned more about my methods and my research questions, told me that they wished scholars would "do more studies like" this one.

Such unusually keen public interest, I believe, is instructive. Few topics are as relevant as educational technology to the disorienting anxieties characteristic of this time and place: a "runaway world" (Giddens 2003) in an era of "liquid modernity" (Bauman 2000). Increasingly unmoored from the predictable, traditional arrangements of the past,

actors feel bewildered and disempowered in the present, and look with trepidation toward an uncertain, even more incomprehensible future. In such a context, it is not surprising that the issues of youth, mass education, and technological innovation have acquired such urgency. These are projects that are believed to strongly influence the future, yet they exist in the present, and are not so distant or abstract that adults generally do not believe they are incapable of exercising influence over their outcomes.

As a result, these projects—and their convergence in the project of educational technology—have assumed an extraordinary symbolic significance. In an era of such widespread disorientation and disempowerment, these projects are felt to be one of the few ways today's adult actors feel capable of positively influencing the future. Mastering educational technology is thus seen as a necessary first step to realizing today's adults' greatest hopes for the future, while the failure to do so seems to invite their worst fears for the future to materialize. The successful implementation of educational technology, in this view, is crucial to the development of today's young people, the institutional revitalization of education, the ethical use of increasingly omnipresent digital technologies—and ultimately, the very viability of late modernity itself. A better understanding of the political, economic, and social processes that influence educational technology outcomes, therefore, will be of keen interest not only to scholars, but also to parents, educators, citizens, and policymakers.

In the following chapter, I provide an overview of the most important extant sociological literature that has examined, directly or indirectly, how these broader processes influence educational technology in the school. I argue that many of the

relevant sociohistorical processes required to fully contextualize the implementation of educational technology—i.e., recent trends in the social construction of adolescence, the defunding and commodifying of education, the political and economic implications of digital technologies and their uses, and the broader political economy of neoliberalism in this historical moment—have been well studied in isolation, but not together. I therefore focus my attention upon articulating the linkages between these processes, to the extent they have been traced in previous studies, and identifying the gaps in the scholarly literature that this study will address.

In Chapter 3, I describe my methods for data collection and analysis. I introduce the two schools I studied, Catholic Academy and Public High, and suggest that the disparate characteristics of these two schools permit a useful comparison of how different social and institutional contexts shape educational technology processes and outcomes. I explain the qualitative methodological approach I employed to examine the social organization of these schools from the dual standpoints of students and teachers, using the discourses and experiences of these groups to trace the features of their daily lives to their broader institutional origins. I include details regarding my research design; my protocols for conducting observations, interviews, and focus groups; and my method of data analysis. I also note some challenges I confronted during my data collection, as well as some of the limitations of my study.

Chapter 4, "Resistant to Change," addresses the research questions from the standpoint of educators. Relying upon interviews with 18 teachers (7 Catholic Academy, 11 Public High) and 9 administrators (8 Catholic Academy, 1 Public High), which are

supplemented by observational data of classrooms, faculty meetings, and professional development workshops, I argue that teachers are overwhelmed and resentful of the attacks upon their profession that have accompanied the crisis narrative of contemporary education. They are not "resistant to change" in the insecure, psychological sense that is usually intended by this phrase, which I heard over and over again in interviews. They are resistant to the *socioeconomic* changes transforming the nature of their work. They are resistant to the usurpation of their pedagogical expertise. They are resistant to the expectation that they should learn a new set of skills in a work environment that affords them little time and support with which to do so. And they are resistant to oversimplifications of the nature of their work, which are often used as justification to undermine their authority and autonomy. Teachers tended to view technology as a pedagogical "tool," which could be "both good and bad" in its application, and which skilled educators such as themselves should be able to use at their discretion. Some rejected technologies entirely as unnecessary or undermining learning outcomes. Others embraced them to various degrees, to the extent they could conceive of ways to use them to support their pedagogical styles, methods, and goals. If, indeed, as Selwyn argues, the reality at most schools is "a largely bounded and restricted engagement with technology," this study suggests that a major reason is because educators remain "largely bounded and restricted" in their beliefs about the benefits of using it. Their differing orientations were ultimately best explained by whether or not they believed digital technologies to be a "tool" of their own occupational (dis)empowerment.

In Chapter 5, "Making a Buck Off My Blood, Sweat, and Tears," I explore Catholic Academy's partnerships with multiple businesses supporting the school's extensive educational technology operations. I first investigate the infrastructural and financial burdens foisted upon Rita, the school's technology coordinator, and Curtis, an onsite technician provided by a third-party company. I then assess the educational technology theories and aspirations espoused by Rita, who also worked part-time as an educational technology consultant. I argue that her vision of educational technology, which rejects the commodification of education through technologies but only concedes partial autonomy to teachers, reveals how educational technology professionals must embrace a highly technical, rationalized definition of teaching and learning in order to legitimate their vision of a pedagogy transformed by educational technologies. I then turn to Miguel, explicating the tenets of his more economically-oriented vision of transforming education through the use of technologies. I conclude with an account of the short-lived partnership between Catholic Academy and Lessonr, a compelling case study of the contentious relations occurring when the differing interests of teachers, administrators, educational technologists, and entrepreneurs collide.

Having covered the primary actors and processes that animate the "educational technology complex," in Chapter 6, "So Hard to Follow," I pivot to address the experiences of the students whom these educational technologies are supposed to benefit. Drawing from focus group data in which 21 students participated (12 Catholic Academy, 9 Public High) and observational data of students at Catholic Academy, I describe how students at both schools, excluded from the adult logics that structure their everyday

worlds, find many of its features baffling. Moving from structured space to structured space, they take considerable pride in being able to utilize technologies in their own ways, learning how to use technologies to both succeed in school and entertain themselves at the same time, successfully evading the adult gaze that seeks (and largely fails) to control what appears on their screens. At Catholic Academy, where "concerted cultivation" (Lareau 2003) is the norm, technologies are both heavily used and heavily monitored, but students nevertheless find ways to use technologies as a means to escape from the stressful demands of high achievement. At Public High, where students and the school alike lack sufficient technological resources, students react angrily to teachers who presume they have accessible, convenient access and sufficient skills to use digital technologies, and embrace these technologies as a distraction from the crushing boredom many of them experience.

I conclude in Chapter 7 with a call for educational reform. I bring together the findings of this study to highlight the embedded, intersecting struggles within schools, and the role of educational technology in sustaining them. I argue that viewing educational technology through narrow biological, psychological, and pedagogical lenses leads to damaging misunderstandings that undermine the ability of teachers and students to resist the intrusions of market actors like Miguel, who seek to commodify education by creating new markets, imposing market logics upon educational processes, and disempowering teachers. In order to maintain education as a public good, educators must understand the socioeconomic stakes, better identify which uses of technologies are in the best interests of teachers and students, and overcome the divisions among themselves that

undermine their ability to resist uses of educational technology more concerned with profit than pedagogy. They also must avoid the temptation to conceptualize students as incompetent and helpless as a way to increase their own socioeconomic value. They should, instead, think of students as young adults and potential allies with a shared interest in preserving education as a public good, rather than the passive, unformed objects upon which they employ their pedagogical “tools.”

CHAPTER TWO: EDUCATIONAL TECHNOLOGY "TANGLED UP"

"There is a need," Neil Selwyn (2011:62-63) contends in *Schools and Schooling in the Digital Age*, his comprehensive review of the sociological literature regarding educational technology, "to develop an understanding of schools [sic] technology policies that goes beyond pointing out the deficiencies of the policy formation process...[asks] questions of the relations that such policies forge with various existing practices...[and travels] with the policies to some of the places where they have settled and taken effect."

Although my research will show educational technology policies are hardly "settled," this study answers Selwyn's call for a detailed inquiry into the "messy reality" of educational technology. An emphasis upon the intersection of policies and practices supports his assertion that educational technology "is a knot that is 'tangled up' in a web of practices that stretch into complex systems beginning and ending outside of the school" (p. 119).

In this chapter, I review the literature regarding the most important of these "tangles" I discovered during my research. What I found is that many of the relevant sociohistorical processes required to fully contextualize the implementation of educational technology—i.e., recent trends in the social construction of adolescence, the defunding and commodifying of education, the political and economic implications of digital technologies and their uses, and the broader political economy of this historical moment—have been well studied in isolation, but not together. It is the objective of this

review, therefore, to articulate the linkages between these processes to the extent they exist, and to identify the gaps in the scholarly literature which this study will address.

Neoliberalism: A Synthetic Approach

At the broadest level, I will argue in this study, local outcomes in educational technology are best explained as the result of the collision of what I will call *the adolescence project*—the contested endeavor of adults, through their management of the socially constructed age category of adolescence, to define who youths are and whom they should become—with the recent market-driven transformations in education which are traceable to the historical ascendency of neoliberal political and economic reforms.

Neoliberalism is a contested theoretical concept: often imputed to be implicated in nearly every contemporary societal ill, it is a philosophy, an arrangement of political economy, and a collection of practices that can be so broadly, vaguely, and diffusely conceptualized as to be nearly useless as a category of understanding. For this reason, I will use this term carefully, even as I will be tracing social and educational phenomena to a set of tenets, policies, and practices usually encompassed by its invocation. In so doing, I hope to retain a focus upon the local, concrete manifestations of this ideology—to the extent it can even be described as such, since it is a category that attempts to describe a diverse, contentious, evolving, and sometimes contradictory set of socioeconomic processes (Bockman 2012). My intent is to investigate how broader neoliberal processes have manifested in the everyday worlds of these two schools studied—and how, conversely, local practices might be said to shape and sustain the broader project of neoliberalism.

Scholars of neoliberalism typically situate their understandings in Marxian or Foucauldian narratives. David Harvey (2005), a chief exponent of the Marxian perspective of neoliberalism, emphasizes neoliberalism as a historical development, tracing its origins to several influential events: the scholarly influence of the Chicago School of Economics; the "stagflation" to which the prevailing Keynesian economic arrangement succumbed in the 1970s; and a series of transitions bringing to power national political leaders who successfully implemented neoliberal reforms—beginning in South America in the 1970s, and culminating with the electoral terms of Ronald Reagan and Margaret Thatcher in the United States and United Kingdom, respectively. Harvey contends that neoliberalism is best understood as "a theory of political economic practices [associated with] liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong property rights, free markets, and free trade," in which the state's role is to "create and preserve [such] an institutional framework" (p.2). In this view, neoliberalism is best understood as a deliberate effort by wealthy capitalists to restore their power after a period of setbacks and constraints beginning with the implementation of New Deal policies in the 1930s. Harvey and other Marxian scholars thus emphasize the redistributive political and economic consequences of neoliberal policies: widening income inequalities, dismantling the welfare state, deregulating businesses, eroding the bargaining power and autonomy of workers, implementing large tax and governmental budget cuts, privatizing the management of public goods, and facilitating the unequal international distribution of wealth from global south to global north through "accumulation by dispossession."

Foucauldian perspectives of neoliberalism, meanwhile, are derived from Foucault's (2008) lectures on the topic in the late 1970s. In contrast to the historically materialistic conception of neoliberalism espoused by Harvey and others, Foucault posited neoliberalism as the latest innovation in the realm of biopolitics he had been tracing genealogically in his earlier works. The shift from external to internal modes of governmentality, first manifested in the transition from the visible violence of the state to the enclosed but tightly regulated panoptical model embraced by prisons and schools beginning in the late eighteenth century (Foucault 1977), reaches an apotheosis in neoliberalism, penetrating and reconfiguring all social relations (even those that are not economic) and identities—famously articulated by Foucault (2008:226) as the genesis of the "entrepreneur of the self"—with its logics. Neoliberalism, according to Foucauldian scholar Thomas Lemke (2002:200), thus "no longer locates the rational principle for regulating and limiting the action of government in a natural freedom that we should all respect," embracing instead "the entrepreneurial and competitive behavior of economic-rational individuals."

Foucaudian perspectives are therefore somewhat less likely to emphasize neoliberalism's role in class struggles waged through institutional policies, and more likely to emphasize its totalizing character that seeks to render bodies, selves, and previously insulated domains of social interaction as rationalized and docile as economic spheres. Wendy Brown (2015), a prominent scholar in this tradition, contends that neoliberalism should be conceptualized not merely as an economic project, but as a "governing rationality" that "switches the meaning of democratic values from a political

to an economic register," increasingly redefining even spheres such as learning and socializing according to marketized metrics and practices (Shenk 2015). Such practices and their effects have been explored by many scholars in recent years, such as Gershon's (2010) investigation of college students ending romantic relationships using social media, and Hochschild's (2012) examination of new markets commodifying and refashioning aspects of intimate life, leading in some cases to an "outsourced self."

Although the historical narratives of neoliberalism's origin and the points of emphases differ between these two schools of thought, there is much to recommend in each perspective. For this reason, I have chosen to adopt a synthetic application which emphasizes the strengths of each school of thought. This is a common practice, as both are seen as complementary theoretical frameworks which may yield valuable insights when applied in tandem—as, for example, in Graeber's (2009) articulation of neoliberalism as a philosophy of absolute individualism that paradoxically has become the basis for the "bureaucratization of the world." In my study, the Marxian perspective of neoliberalism is well suited to contextualize the large class-based differences between the two schools I have studied, which include the funding and provisioning of digital technologies, the sophistication of pedagogical implementation, and the myriad practices (with or without the support of technologies) preparing Catholic Academy students to occupy elevated socioeconomic positions as adults, while simultaneously impeding Public High students' future socioeconomic prospects. It is also helpful to contextualize the increasing socioeconomic marginalization of teachers—which, I will argue in

subsequent chapters, is among the most important sources of teachers' skepticism and resistance to the implementation of educational technologies.

However, there are also many findings in this study that are better suited to the Foucauldian conception of neoliberalism, as well as the disciplinary regimes described in his earlier works. Schools are subject not only to the public disinvestment of funding that affects Public High, the privatization of governance apparent at Catholic Academy, and the socioeconomically reproductive policies and practices present at both schools. Schools are also a site of regulation for young bodies, whose technological activities are feared and must be monitored in a panoptical manner using other technologies, as I describe in Chapter 6. They are, moreover, institutions in which technologies have been taken up to digitally reproduce practices that were once done on paper, such as writing and grading. These have little additional educational value for the students—and, I will show, often have little value for teachers as well, who do not always save time or increase their efficacy by digitizing their classes. But they do contribute to processes of administrative and pedagogical rationalization (Weber 1968) that are not solely economic.

Most importantly, the Foucauldian conception of neoliberalism is important to contextualize the "middle way" of educational technology promoted by educational technologists and consultants such as Rita. Attempting to strike a balance between the market forces compelling schools to use educational technologies and the teachers who are resistant to them, such proponents favor the aggressive implementation of educational technologies, but in ways that attempt to preserve some measure of teacher autonomy and

a vision of education as a public good. In doing so, however, they must embrace a highly technical, specialized, and rationalized theory of teaching and learning in order to legitimate their preferred policies and practices. They also require teachers to assume the burden of becoming flexible "entrepreneurs of the self" in their pedagogy. The approach of these educational technologists would appear to be resistant to the neoliberalization of education when viewed from a Marxian perspective. However, as I will argue in Chapter 5, this attempt to reconcile both educational visions is quite neoliberal from a Foucauldian perspective.

Defining Technologies, Youths, and Schools

For the purposes of this study, I will employ a multidimensional definition of digital technologies. Materially, digital technologies refer to a wide array of artifacts dependent upon discrete (rather than continuous or analog) mechanisms of data storage, retrieval, transmission, or representation. Such artifacts combine and configure these digital mechanisms in particular ways to yield objects produced for mass consumption, such as personal computers, mobile phones, digital projectors, smartboards, and other such devices. This is what is meant by *hardware*.

Among the most important characteristics of these technologies is their dependence upon language: they receive particular inputs that are syntactically translated into commands, and are then processed in particular ways and rendered as particular outputs. A second dimension to which digital technologies refer, then, are the compilations of language that induce intelligible and meaningful operations from these

artifacts, such as operating systems, programs, and applications. This is what is meant by *software*.

A third dimension emerges from the common use of *networking* technologies to link digital technologies with one another, enabling a wide range of synchronous or near-synchronous social and technological interactions on a global scale, compressing time and space in unique ways (Bauman 2000). Two such networks are particularly important: the internet, a widely accessible network of billions of personal computers, servers, and smaller networks using a common protocol to communicate with one another (Abbate 1999), and mobile phone networks, which provide direct mediated communication with other actors through satellite technologies, and which increasingly also deliver internet content to users. Such *networks* and the networking technologies that enable them, therefore, are also an important dimension of what is meant by digital technologies.

Finally, in addition to these hardware, software, and networking aspects, digital technologies also encompass a necessary, contingent, and social dimension of *use*. On one hand, the particular forms of technologies are characterized by both the *flexibilities* that enable particular uses, as well as the *affordances* that constrain or proscribe other uses. These flexibilities and affordances of technologies are ultimately traceable to particular social, political, and economic conditions that inform their design, marketability, and consumption (Bijker, Hughes, and Pinch 1987). In this regard, it can be seen that technologies are neither value-neutral nor "both good and bad," as so many participants in my study asserted. Instead, there are many ways by which "[technological]

artifacts have politics" (Winner 1986) through the array of flexibilities and affordances they present to their users.

But uses and users of technologies must also be traced to social, political, and economic processes. Although technologies do not determine social or historical outcomes (Misa 1988), as proponents of technological determinism often assume, digital technologies are significant as objects around and through which norms, practices, and identities are defined, and user roles are constructed (Turkle 1984). Users thus have an enormous influence upon digital technologies through the creative, agential ways by which they may take them up in ways not intended by their creators, as well as the ways by which users incorporate them into their everyday lives (Rogers 1962). Because the work of teachers and students requires a large amount of routinization, and the introduction of novel technologies into their workflows causes delays and disruptions to these work processes, the demands of technological adaptation upon already overwhelmed teachers and students is another significant source of resistance. A fourth and final dimension of digital technologies, then, encompasses the social processes of use that are inseparable from the hardware, software, and networking architectures: "the things that are then done" by social actors who interact with digital technological artifacts in socially meaningful ways (Selwyn 2011:6).

Since the innovation and widespread proliferation of these digital technologies, several sociologists have noted, corporations have taken advantage of the speed of action and international operations they support in order to more successfully escape the slower, more deliberate, territorially bounded regulatory processes of the state (Castells 1996;

Bauman 2000; Beck 2005). In this regard, digital technologies, as well as their communicative and informational capabilities, have contributed to the success of global neoliberalism through the opportunities they present to corporations. Yet these grand theorists are careful not to ascribe too much causal influence to technologies, since it is less the technological capabilities themselves, but rather the ways by which capitalist interests have taken up technologies to generate new commodities that explain many of the forms our current technologies take. "Technology does not determine society; it embraces it," argues Manuel Castells (1996:5) in his influential trilogy, *The Information Age*. "But neither does society determine technological innovation; it uses it."

Technologies and Youths…Without Education

Rates of digital technology use remain highest among young people, although rates of use among adults continue to climb. According to longitudinal data from the Pew Research Center's Internet Project, roughly 95 percent of teens aged 12-17 are at least occasional internet users, a figure that has held steady since 2006. Among adults aged 18 and older, by contrast, the rate of internet use has climbed from 68 percent in 2006 to 87 percent in 2014. Young people also own digital technologies in large numbers, although these rates tend to trail those of adults. As of 2012, in the middle of this study's data collection, 80 percent of teens aged 12-17 owned a computer, 78 percent owned a cell phone of any kind, and 37 percent owned a smartphone.

Sociologists, of course, have been interested in this age group long before they became digital technology users—and previous scholarly work in the sociology of youth sheds important light upon the anxieties adults have with respect to teens and their uses

of digital technologies. There is a long tradition in sociology of adopting a framework of a linear "life course" to study differences among age groups (Furstenburg 2003). This tradition emphasizes *cohorts*, or generations of actors undergoing the same phases of the life course during the same historical moments; *transitions* (often demarcated and reinforced by meanings attached to particular life events) into distinct phases characterized by particular social positions and roles; and *trajectories* by which the present positions and roles of actors are seen as dynamically linked to past and future phases of the life course that actors have and will occupy (Elder and Giele 2009).

However, more critical scholars have argued that such a framework can obfuscate the social construction of age categories, as well as important differences within age groups with respect to race, gender, and class (Paxton 1999). As with studies of many other subordinated social groups, there is a danger that researchers will uncritically adopt the frames and ideological standpoints of adults that take for granted, naturalize, and legitimate the subordination of young people. As Best (2007:2) observes, this failure to reflexively examine the privileged position of the researcher "not only render[s] particular groups invisible but also obscure[s] and distort[s] our understandings of the everyday worlds they occupy *and* their social organization."

For these reasons, I situate my understanding of adolescence in this tradition of critical youth studies, which itself emerged from the New Childhood Studies of the 1990s. This tradition emphasizes that while it is indeed true that adolescence is a temporally bounded social position situated in larger "trajectories" or "pathways," as life course scholars (e.g., Crosnoe and Johnson 2011) argue, it is also the case that

adolescence is a state of *being* as well as one of *becoming* (Corsaro 2005). Young people have their own concerns beyond the concern of parents, educators, and the broader public to develop them into successful adults, such scholars argue, and it is therefore important not to devalue the present practices or meanings of adolescents, nor their current social and (sub)cultural organization.

It is this attempt to develop young people into future adults, which is both collaborative and contested, to which I am referring as the "adolescence project." I do so to highlight the socially constructed, historically contingent character of adolescence, which, as many scholars have observed, only became a legitimated life stage at the turn of the twentieth century (Lesko 2001). It is a project that has evolved over time and in tandem with the contemporary system of mass education, which has been tasked—along with families and other institutional orders such as the legal system—with managing it. It is for this reason that I prefer to use the terms "youths" or "young people" rather than "teens" or "adolescents" when I am speaking of young people themselves, since the latter terms represent in some respects an imposition of adult frames, interpretations, and judgments upon young people that should not be exempt from critical analysis.

I view adolescence, therefore, as having a dual character of *experience* and *discourse*. The experiential dimension of adolescence refers to young people's everyday worlds. Though they confront formidable constraints, they also act as agents. Though there are certain experiences shared by all adolescents, their experiences are also shaped by their concurrent placement in other categories of stratification. There is a rich ethnographic tradition of exploring the intersections of adolescence with race (e.g.,

MacLeod 1987) , gender (e.g., Pascoe 2007), and socioeconomic class (e.g., Willis 1977) in schools, and it is an objective of this study to consider how uses of educational technology may support, alter, or even mitigate these previously uncovered dynamics.

My conceptualization of adolescence as a discourse, by contrast, is derived from Foucault's (1972) concept of the discourse, which refers to the ways by which "systems of thoughts composed of ideas, attitudes, courses of action, beliefs and practices...systematically construct the subjects and the worlds of which they speak" (Lessa 2006:285). This concept usefully emphasizes the socially constructed dimension of adolescence, while also emphasizing the ways by which adults ideologically legitimate the exercise of power over adolescents. One of the ways this is accomplished, for instance, is by discursively sorting adolescents into mutually exclusive groups of passive objects or malevolent threats, a process which is clearly influenced by variables of race, gender, and class (Mazzarella 2003). In this discursive maneuver, narratives of moral vulnerability and biological (i.e., brain-based) underdevelopment combine with the shrinking middle-class opportunities that have accompanied the rise of neoliberalism to encourage privileged, pathway-oriented parents to embrace a parenting paradigm of "concerted cultivation," characterized in part by a maximization of academic outcomes and protection from the threats that may be seen to jeopardize them (Lareau 2003). At the same time, narratives of biological underdevelopment may also be applied to construct youths as impulsive deviants, a characterization which is invoked to justify disinvestment in social services aimed at adolescents and families, increasingly punitive interventions aimed at adolescent offenders, and collective conceptions of young generations as

criminal suspects or scapegoats for a wide variety of social problems (Males 1996; Giroux 2003). These negative characterizations and justifications are especially likely to be applied to poor or minority youths (Binder 1993).

In recent decades, adults have also discursively hitched young people to their uses of digital technologies, to the extent that they are often characterized as a "digital generation." The anxieties surrounding young people's uses of technologies have led to widespread concerns regarding online sexual predation, cyberbullying, and "sexting"—concerns which, although not entirely unfounded, have often been exaggerated and employed as justification for moral panics (Marwick 2008; Lynn 2010). Even some scholars may be seen as contributing to these concerns and fears. Turkle's (2011) *Alone Together*, for instance, reached a wide audience and seemed to lend support to fears that digital technologies are encouraging shallower, more superficial interactions among youths, yet has been compellingly criticized for its overly simplistic framework of separate, inherently inferior digitally mediated interactions competing in a zero-sum manner with those occurring in the offline, "real" world (Banks 2012). While Turkle's research may be applicable to a subset of excessive technology users, the preponderance of sociological and communication studies have found positive effects related to social capital and social tie maintenance. (See Lynn and Witte 2015 for a systematic review.)

Scholars have been critical of other popular discourses regarding digital technologies as well. The widespread educational concept of the "digital native," for instance, has been roundly criticized (Bennett, Maton and Kervin 2008; Clegg, Hudson and Steel 2003; Collier 2010; Kennedy et al. 2008; Thornham and McFarlane 2010).

Buckingham (2008:14-15) concisely summarizes the consensus among critical youth and technology scholars:

> Recent studies suggest that most young people's everyday uses of the Internet are characterized...by relatively mundane forms of communication and information retrieval...There is little evidence that most young people are using the Internet to develop global connections...Young people may be "empowered" as consumers...[b]ut there is as yet little sense in which they are being empowered as citizens...[T]he potential for multimedia production...is generally quite inaccessible to all but the wealthy middle-classes. Research also suggests that young people may be much less fluent or technologically "literate" in their use of the Internet than is often assumed.
>
> Aside from those who are denied access to this technology, there are also many who positively refuse or reject it, for a variety of reasons...In general, one could argue that for most [young] people, technology per se is a relatively marginal concern. Very few are interested in technology in its own right, and most are simply concerned with what they can use it for.
>
> Ultimately, the discourse of the 'digital generation' is precisely an attempt to construct the object of which it purports to speak. It represents not a description of what children or young people actually are, but a set of imperatives about what they should be or what they need to become.

Although young people's uses of technology have received considerable attention from sociologists and communication scholars, the lack of attention to their uses in educational settings is somewhat surprising. Ito et al.'s (2010) and boyd's (2014) celebrated ethnographic studies, for example, emphasize "teen sociality" and "hanging out [or] messing around" over uses in educational settings. Additional studies have emphasized adolescent meanings and experiences associated with social network websites (e.g., Antheunis and Schouten 2011; Lewis and West 2009), ownership of mobile phones (e.g., Blair and Fletcher 2010), norms of online friendship and digital play (e.g., Fono and Raynes-Goldie 2006), online subcultural socialization (e.g., Hodkinson 2006), and the "lifeworld of youth in the information society" (Morimoto and Friedland 2011). While these studies all contribute important understandings of youths and their uses of digital technologies, it remains unclear how these meanings, practices, and experiences relate to those occurring in educational contexts.

Part of this sense of disconnect, Ito et al. (2010:2) suggest, is due to a "'digital divide' between in-school and out-of-school use...symptomatic of a much broader phenomenon—a widening gap between children's everyday 'life worlds' outside of school and the emphases of many educational systems" (Buckingham 2007:96). However, if indeed there is such a disconnect, this claim requires more research in the school—research that also situates educational uses of digital technologies in the broader contexts of youths' lives and their uses of digital technologies outside the school—to be corroborated. It also remains to be seen, to the extent that such a claim accurately reflects youths' experiences, how youths themselves articulate and make sense of this divide between experiences in and outside of the school. The valuable work of Ito et al. (2010) and others, then, must be balanced by similarly rigorous and comprehensive ethnographic work that begins in the institutional setting of the school, and traces the connections between uses of digital technologies within the school and uses outside the school.

Technologies and Schools…Without Youths

Although the everyday lives of youths are organized by many institutions, schools are certainly among the most influential. As sites of work, discipline, pedagogy, learning, and socialization, schools occupy a shared position in the educational order as a compulsory institution processing young people in their mid- to late teens, with many common cultural and organizational practices. But they can be quite different from one another as well, and are also deeply intertwined with the workings and practices of other institutions, such as states, markets, and families.

Sociologists have long argued that the collective operations of schools and these other institutions support and legitimate dominant relations of stratification, which (re)produce wide disparities of educational experiences along dimensions of race, gender, and class. Because compulsory schooling in part aims to transmit the knowledge and skills necessary to occupy the adult roles of worker and citizen (Bowles and Gintis 1976), schools have received considerable attention as institutions of social and economic reproduction (e.g., Anyon 1980; Bourdieu and Passeron 1977; Lareau 2003). Partly as a result of this failure to provide equal opportunity—but also partly due to the disdain for public services that has accompanied the rise of neoliberalism—expert assessments (such as "A Nation at Risk") and media depictions (such as *Waiting for Superman*) of the efficacy of the American educational system have become increasingly negative since the 1980s. These widespread perceptions of institutional decay, fueled by narratives of disengaged youths and ineffective teachers and administrators, have been invoked as justification for the mass reorganization of school governance, the imposition of formidable standardized testing requirements for the sake of "accountability," and the withdrawal of public funds for underperforming schools (e.g., No Child Left Behind Act of 2001). This has occurred, moreover, in an era in which schools are expected to successfully process more numerous and diverse students with more complex, demanding needs than in previous decades. Although many other experts and commentators have argued that it is this public disinvestment in social services that is most responsible for the continuing decline of American schools (e.g., Giroux 2003), the existence and extent of the decline itself is generally not disputed. The proliferation of new digital

technologies, therefore, exists at the intersection of a perceived crisis in education that has lasted for decades, and a project of managing the development of adolescents that has lasted for scarcely more than a century. The concept of using technologies in schools to improve learning is hardly new: Saettler (1968), for instance, in his history of instructional technology, documents the extensive use of instructional film, television, and radio between 1945 and 1965, as schools adapted the technological advances of World War II to cope with the explosion of student populations. But digital technologies have been especially susceptible to fanciful hopes of educational transformation. As Selwyn (2011:8) notes, "many people see the primary concerns of education as resonating especially closely with those of digital technology—i.e., the production and dissemination of information and knowledge through communication and interaction with others." As a result, he continues, "growing numbers of people have proved all too keen over the past forty years to seize upon digital technologies as offering a ready 'technical fix' for the problem of the underperforming and failing school" (p. 10). Since youths are presumed to have a greater fluency and interest in new digital technologies than adults, there is a widespread belief among many educational commentators and practitioners that it will be possible to achieve more positive educational outcomes for youths, if only adults can implement these technologies effectively in educational settings (e.g., Prensky 2001).

Many schools have responded by dedicating considerable resources toward the enhancement of schooling through uses of digital technologies. According to one market research firm, worldwide spending on K-12 educational technologies in 2013 exceeded

$13 billion, with $4 billion spent within the United States on mobile technologies alone (Nagel 2014). Some of these investments have been controversial, especially amidst budget cuts and other pressing educational needs. In 2013, for example, the Los Angeles city school district reached a $1 billion agreement with Apple to equip every K-12 student with an iPad—an initiative that was suspended less than two years later due to prohibitive costs, implementation difficulties, and significant resistance from parents and educators (Kastrenakes 2014).

But in contrast to literatures that emphasize youths' digitally mediated activities outside of the school, literatures that examine the implementation of digital technologies within the school are likely to focus upon the school while paying relatively little attention to the opinions, experiences, or perspectives of the youths themselves. Selwyn (2011), for example, whose relatively recent review of digital technology uses in schools is also the most comprehensive, only devotes part of a chapter to examining digital educational technologies from the standpoints of students. Although exceptions exist (e.g., Garrison and Bromley 2004; Hope 2005; Johnson 2009), literatures that foreground digital technologies in the school almost unanimously do so to the exclusion of the students whom these digital educational technologies are intended to benefit.

This is not to claim, however, that studies examining the outcomes of digital educational technology uses are rare; on the contrary, they are quite common and are a frequent subject of meta-reviews (e.g., Lowther, Ross and Morrison 2003). Such reviews have uncovered evidence for a number of benefits and shortcomings associated with current practices of digital technology use in schools. On one hand, quantitative

assessments tend to show that digital technology uses are associated with elevated academic achievement, motivation, collaboration, and independent learning. On the other hand, however, many studies have repeatedly shown that uses of digital educational technologies vary widely between and within schools, and furthermore that digital technologies are usually integrated into schools slowly and ineffectively, with pockets of considerable resistance among educators. Most uses, moreover, are merely primitive digitizations of traditional work processes (e.g., using Powerpoint instead of an overhead projector) rather than employing technologies in ways that could not be accomplished without technologies (e.g., a Spanish class video chatting with students in a Spanish-speaking country). Many uses, furthermore, are also overlaid and constrained by considerable restrictions and institutional surveillance.

The overall picture, Selwyn (2011:25) concludes, is one of "a largely bounded and restricted engagement with technology within school settings." In light of the persistent political, professional, and pedagogical focus upon the use of digital educational technologies over the past twenty years—often accompanied by lofty promises of transformative effects in teaching and learning, along with considerable investments of financial, technical, and professional resources to realize these goals—this generally inconsistent, limited, and unmistakably *non*-transformative implementation of digital technologies in schools demands an explanation that previous literatures cannot and do not fully provide.

There are, I believe, two major reasons for this deficiency. The first, as I have already suggested, is that digital educational technology literatures do not incorporate the

standpoints of the youths who use these technologies. The adult prerogative to exclusively define what is best for youths without considering youths' experiences is common outside of critical youth studies, but has been compellingly criticized within this field for perpetuating relations of domination and precluding the possibility that adults can learn from youths (e.g., Best 2007). The second reason, upon which I will elaborate below, is that previous studies have generally failed to comprehensively map both the complex web of social relations as well as the multiple discursive frames that converge in the school when digital technologies are locally implemented. As a result, accounts and explanations are necessarily partial and decontextualized, with little understanding of the full scope of relations bearing upon uses of digital technologies in the classroom, and the ways in which these multiple factors interact in local settings, and are engaged by educators and students as *agents*.

The Educational Technology Complex

Some of the important groups involved in the implementation of digital technologies, such as administrators, technologists, teachers, and students, are obvious. Relations between these groups, therefore, are an important component of any inquiry into the uses of digital technologies in schools. A major accomplishment of Selwyn's (2011) review, however, is a more comprehensive consideration of how "the use of digital technology in schools is influenced by a variety of stakeholders and interests long before it enters the classroom setting" (p. 55). Selwyn's analysis advocates a framework that includes an acknowledgement and investigation of "what has been described by

David Buckingham (2007) as the 'educational-technology complex.'" This network, he contends:

> can be seen as an amalgam of 'other' stakeholders in schools' use of digital technologies that represent a range of vested interests in educational technology...these actors include journalists, educational technologists, advisory services, teacher groups and parental advocates, researchers, marketers, non IT-related commercial interests and the extensive local and central quasi-government bureaucracy (P. 79)

The local organizational aspects of implementing digital educational technologies, in other words, must be balanced by a structural consideration of major groups who are involved in the educational field and the production of digital technologies.

Although Selwyn's (2011) review performs a much needed overview of these groups and the significant relations between them that scholars have begun to identify, there are two important ways by which the work he has begun may be continued and elaborated. The first is to contextualize these structural relations in local settings. Selwyn himself advocates for more studies that "approach schools [sic] technology policy from a 'performative' point of view—i.e., to travel with the policies to some of the places where they have settled and taken effect" (2011:63), and bemoans what he perceives to be a general shift in the sociology of education "away from what goes on inside schools, and on to the processes of how people get access to schools in the first place" (p. 9). Although this latter contention neglects the diverse array of recent studies (e.g., Best 2000; Eckert 1989; Gordon 2010; Khan 2011; Lareau 2003; Luttrell 1997; Pascoe 2007) that have continued to uphold the tradition of the influential ethnographic studies of schools during the 1970s and 1980s, such a rich, contextualized study has yet to be conducted with a focus upon uses of digital technologies in schools. Without such a study, it is unclear how these actors and dynamics comprising the educational technology complex become more

or less important or influential in varying local contexts. Nor, in addition, is it apparent how organizational actors such as educators and students respond to these influences not merely through the lens of their institutional roles and constraints, but as agents who exercise some degree of control over their actions and local contexts.

The second way in which Buckingham's (2007) and Selwyn's (2011) initial articulation of this broader field of groups and relations may be extended is to emphasize not simply the differential goals and interests between groups, but also the important differences *within* groups that affect the local implementation of digital technologies. For example, in contrast to the paucity of studies that accounts for the diverse attitudes, beliefs, and perspectives of students, there is a prolific literature that has probed the many factors by which teachers adopt different views of digital technologies in ways that affect the implementation of these technologies in their classrooms. A partial list of the factors that influence these views includes: age, amount of teaching experience, grade levels taught, subjects taught, pedagogical styles, conceptions of their own teaching strengths and weaknesses, conceptions of administrative or parental demands, practical considerations of available time and abilities, concerns about deskilling, discipline, or distractions, judgments of youths' ability to responsibly and effectively perform independent work, and judgments related to youths' dependency upon digital technologies (e.g., Churchill 2006; McGrail 2006; Ruthven et al. 2004; Sugar, Crawley and Fine 2004; Windschitl and Sahl 2002).

Many of these factors are grounded in the particular local contexts of the teacher and the school in which (s)he works. Many others are also grounded in the everyday

experiences of the teacher outside of the school, as broader concerns about youths and the effects of digital technologies upon youths in particular are brought by teachers into the school. Without a rich ethnographic examination that accounts for these local contexts, it is impossible to know how these factors become more or less important or influential in the actual, local implementation of digital technologies in schools.

Beyond mapping the actual social relations converging in the implementation of digital technologies in schools, it is also important to be mindful of the many competing discourses that seek to legitimate particular educational agendas. Because so many individuals, groups, and institutions are involved in the implementation of digital technologies in schools, it is clear that "digital technology in schools has emerged as a ready focus for the legitimating of a variety of external publics with differing aims and objectives" (Selwyn 2011:85). Collective understandings of digital technologies, therefore, are likely to be congruent with these differing aims and objectives. Political actors may see digital educational technologies as "a high-profile way of keeping 'on message' with a number of broad political themes" (p. 66). Commercial actors may see digital educational technologies as an exploitable market, a fertile testing ground for more profitable technologies employed in the workplace, and a means of promoting brand recognition among young consumers. Institutional actors in the school or district, concerned with their own personal or institutional survival, may see digital educational technologies as either a means to this end or a dire threat. These frames (Goffman 1974) emphasize certain aspects, visions, or implementations of digital educational technologies

over others, and compete with one another to inform the actual implementation of local policies and practices.

Such frames, of course, are not limited exclusively to digital educational technologies. Broader discursive struggles regarding the nature of youths, the goals and best practices of schools, and the perils and promises of digital technologies are also significant. For example, a common trope among many actors involved in the implementation of digital educational technologies is the classificatory scheme of "digital natives" and "digital immigrants," a convergence of determinist narratives of life cycle, generational, and technological causation. Adherents to this typology contend that the current generation of youths possesses intractable biological, psychosocial, and informational processual differences from adults who did not grow up using digital technologies (e.g,. Prensky 2001). Young "natives" are comfortable in the new social and historical context of pervasive digital mediation, while older "immigrants," having been socialized in an environment without digital technologies, adapt with varying degrees of success, although they inevitably retain an "accent" from their formative years and can never obtain the fluency of the digital natives. As a result, adherents of this discursive frame argue that schools and digital immigrants who hold positions of authority within them must transform their pedagogies and practices to accommodate these differences, or they will fail to maximize youths' potentials and prepare youths for digitally transformed workplaces.

This discourse inadequately articulates relationships between patterns of brain activity, behaviors, and cultural or subcultural practices, neglects important dimensions

and intersections of social structural and cultural inequalities, and ignores historical continuities of disciplinary relations among youths, adults, and technologies. Nevertheless, as my study shows, it is widely accepted and often invoked as inspiration for many policies and practices involving digital educational technologies. The implementation of these technologies, therefore, cannot be fully understood without an examination of discourses (such as that of digital "natives" and "immigrants"), the individuals, groups, and institutions that propound or contest them, and the local processes by which such discourses become more or less important or influential in the actual, local implementation of digital technologies in schools (Smith 1999).

Conclusion

One objective of this review has been to argue that the widespread use of digital technologies in schools represents a confluence of broader sociohistorical trends and processes that have not typically been studied together by scholars. Young people's uses of technologies have been well studied outside of school, for instance, but less frequently within them. Educational technology has been well studied from a pedagogical perspective, but rarely from a sociological perspective that also considers the perspectives and experiences of youths. The educational technology complex, meanwhile, holds considerable promise as a way of understanding the collision of multiple stakeholders that occur in educational technology uses, but must be studied in local settings in order to better understand how these stakeholders both collaborate and contest the implementation of policies and practices.

Neoliberal policies and practices have had an indelible effect upon youth, education, and the use of digital technologies. Disinvestment in forms of welfare, for example, has disproportionately affected young people. The youth age bracket now has the highest poverty rate among all age groups, and where Males (1996) sees a "scapegoat generation," Giroux (2003) argues compellingly that the current cohort of youths is also an "abandoned generation." Although adolescence has long been associated with distinctive patterns of consumption, the emphasis upon creating and sustaining markets with minimal intervention associated with neoliberalism is seen by some to have led to a more pronounced "branding" of adolescents that superficially empowers them as consumers, but is simultaneously disempowering as it transforms them into commodities (Giroux 2003; Quart 2003; Schor 2004). As the logic of neoliberalism increasingly permeates institutional practices, it has also affected youths' own meanings and practices, since neoliberal ideologies both structure youths' perspectives and are agentially taken up by youths themselves (Milner 2004).

Schools are among the institutions that have been most affected by the trends of privatization and disinvestment in public goods. At all levels of government, public schooling funds have been withdrawn, and public-private or entirely privatized modes of schooling have proliferated (Giroux 2009). The poor performance of public schools—partially the result of decreased public funding—has then been invoked to promote still further disinvestment. Teachers have suffered many of the consequences, becoming overworked and underpaid, with their unions regularly attacked for impeding structural transformations in the school.

A less considered but no less important facet of neoliberalism, I have argued, is a particular way of conceptualizing and taking up digital technologies. Castells (1996), in his influential work, has argued that the object of capitalism—that is, the thing it seeks to harness and commodify—has shifted from *energy* in the industrial era to *information* in our contemporary postindustrial era. The informational flexibilities of digital technologies are therefore essential to the functioning of contemporary capitalism. Social network sites such as Facebook, for instance, can be seen as an attempt to commodify social interactions themselves, an observation that is resonant with both Marxian and Foucauldian conceptions of neoliberalism. This conception of technology as a mechanism of commodification, I will argue later, stands in stark contrast to the conception of educators who wish to take up digital technologies to achieve non-economic goals, such as personal growth and learning.

The research gaps and limitations delineated in this chapter encourage a particular type of study with particular goals, which in turn suggest the utility of particular methods of data collection and analysis. First, a study that addresses these limitations will open the "black box" of digital technologies, viewing these artifacts not merely as media, independent variables, or means to an end, but rather as socially, politically, and economically constructed objects bound up with the social, political, economic, and technical construction of their users, who use these technologies as embodied agents in local contexts that strongly influence the possibilities and constraints of use.

Second, the standpoints, meanings, activities, and everyday worlds of youths must be reconciled with the implementation of digital educational technologies in schools.

Instead of focusing on youths' experiences with digital technologies outside the school, or adopting an adult perspective to examine uses of digital technologies inside the school, youths' experiences should be the point of entry into uses of digital technologies in schools. This inquiry should encompass sanctioned and prohibited uses of digital technologies in school settings, as well as formal educational uses of digital technologies within and outside of the school. Emphasis should be placed upon situating these uses in the everyday worlds of the youths studied. By beginning data collection and analysis in this way, such a study will address a major gap in the scholarly literature and also provide a grounding for the local and extralocal factors that enter into and organize the everyday experiences of contemporary adolescents.

Third, both local and extralocal factors must be examined without resorting to generational, age-based, or technological determinisms, or by denying the agency of local actors. The organization of adolescents' everyday worlds extends far beyond their view, as they are but one (hardly homogenous) group in the network of social relations that produces and implements digital educational technologies. They are, however, not mere objects or passive actors. They are active, albeit constrained, participants in their everyday worlds. The fixing of a starting point—the everyday worlds of local adolescents—permits the relations that organize their worlds to be traced beyond the scope of their experiences without decontextualizing the influences of broader relations upon local practices and experiences. Such an inquiry will benefit youths by enabling them to see beyond the scope of their everyday worlds into the ways by which their lived experiences are organized. Moreover, it will benefit educators and adult publics by

bringing youths' voices and meanings into educational debates and articulating the effects of broader relations upon the experiences of local youths.

Finally, the scholarly literature will also benefit from examining teachers' relationships with educational technology not merely through the lens of *pedagogy*, but also through the lens of *work*. There is more to teachers than teaching, just as there is more to students than learning. With so many stakeholders attempting to influence the implementation of educational technology, the job expectations of teachers have become a site of struggle. To the extent that teachers do not satisfy the powerful interests of the educational technology complex with respect to how and to what extent digital technologies are used, do they face reprisals? Are they able to maintain their autonomy? Or are they becoming increasingly deskilled, overwhelmed, and alienated from their jobs?

A study that combines these goals will demonstrate that digital technologies in schools are far from "an underwhelming case study of the technological" (Selwyn 2011:9) or a mere secondary aspect of the everyday experiences of adolescents. Digital educational technologies are a site of convergence for many artifacts, interested actors, and institutions, the relations between which have yet to be fully traced. A thick, detailed investigation into the "messy reality" of digital technologies in schools, as Selwyn (2011) argues, is sorely needed. In the following chapter, I describe the methods I used to conduct such an inquiry.

CHAPTER THREE: METHODS

As I thought more carefully about how I might accomplish the goals described in the previous chapter, I concluded that certain methodological elements would be essential. Because of my interest in the "messy realities" of schools, my study would require a method with sufficient depth to expose them. Such a method would ideally place me in direct contact with these messy realities through observations, conversations, and important documents. It would expose me to many different types of actors in the school, including interactions from which some actors (such as students) are excluded.

But this itself would not be enough, as it would be too simplistic to assume the school could be studied as an isolated environment. On the contrary, it is an institution whose daily life is indubitably influenced by outside actors, whose policies and practices are often orchestrated in response to external as well as internal factors, whose institutional actors bring their own understandings, meanings, and experiences outside of the school into the school every day. It was therefore important, I concluded, that thick descriptions of everyday happenings in the school should be sufficiently traceable to the external factors that may or may not be acknowledged in the moment, yet which indelibly shape the daily life of the school.

Finally, due to my interest in youths and teachers, I recognized that I would be relying upon groups of actors whose understandings, meanings, and experiences are sometimes devalued by more powerful actors. As I interacted with actors of all group affiliations and status levels, many of whom would be contesting contrary explanations or

even blaming one another for those messy elements of their everyday lives they deem undesirable, it was imperative that all actors' accounts should be heard, valued, and contextualized before drawing any conclusions with respect to the merits of these accounts. I was therefore very interested in employing a method that foregrounded the experiences of the youths and the teachers, and did not devalue the truth of their experiences, even if these were invisible or unpleasant for the other more powerful actors with whom I would be speaking.

Institutional Ethnography as Inquiry

It was for these reasons that I determined an application of Dorothy Smith's method of institutional ethnography (1987, 2004) would be an ideal method for my study. Smith's sociology combines a number of theoretical influences, the most prominent of which are Marx's historical materialism, Schutz's phenomenology, and the broader fields of ethnomethodology and feminist studies.

The method is distinguished by a dual and ordered inquiry that starts with and remains grounded in the local, actual, material organization of actors' everyday worlds. From this standpoint, the researcher examines how the everyday experiences of particular actors in particular local contexts are organized by extralocal, institutional "ruling relations." As Smith (2004) describes in one of her more recent works:

> Institutional ethnography begins by locating a standpoint in an institutional order that provides the guiding perspective from which that order will be explored. It begins with some issues, concerns, or problems that are real for people and that are situated in their relationships to an institutional order. Their concerns are explicated by the researcher in talking with them and thus set the direction of inquiry...From the beginning stages of inquiry, lines of further research emerge that are articulated to the first as research uncovers the social relations implicated in the local organization of the everyday...Each next step builds from what has been discovered and invades more extended dimensions of the institutional regime. (P. 32-34)

The practice of institutional ethnography seeks to engage a group of local actors about their "everyday worlds" (1987), treating them as authorities of their own experiences and the ways by which the meanings and practices of their everyday lives are coordinated. The data gathered from these interactions are then used to trace how the experiences of these actors are organized by other actors and institutions, whose logics are only partially visible or hidden from the standpoint of the subjects studied.

The justification for such a method lies in professional sociology's neglect of lived experiences and actual everyday relations, which results from its participation in the "ruling relations [of society]" that Smith (2004:10) defines to be "that extraordinary yet ordinary complex of relations that are textually mediated, that connect us across space and time and organize our everyday lives." These ruling relations, Smith contends, consist of "people who are at work in corporations, government, professional settings and organizations, universities, public schools, hospitals and clinics, and so on...[whose] capacities to act derive from the organizations and social relations that they both produce and are produced by" (p. 18). Their influential actions are coordinated by shared understandings transmitted through texts that explicate, legitimize, and enforce the discourses, rules, laws, regulations, norms, frames, and contingencies that order the actions of ruling actors.

Due to its place in the academy, Smith contends that professional sociology is itself part of the ruling relations; hence, many of its prominent theories, categories, and methods are embedded in discourses of capitalism, patriarchy, and other systems of domination, and therefore tend to distort rather than illuminate. The effects of this

embeddedness are particularly apparent when marginalized populations are studied. The widespread distinction between home and work as separate spheres of activity, for example, is an apt categorization of the experiences of men who do not perform labor (paid or unpaid) in the home, but has little utility when applied to the everyday experiences of women who must perform large amounts of unpaid labor in the home (Smith 1987). Nevertheless, it is common in sociology for such distinctions that uncritically adopt the perspectives of men or other privileged groups to be imposed upon data preemptively, in spite of their lack of relevance to the actual organization of women's or other marginalized groups' experiences.

The result of this complicity with the ruling relations of society, according to Smith (2004), is that professional sociology

> interprets the everyday and local events in terms of a framework originating in sociological and political economic discourse. Its conceptual structure displaces people, displaces their activities, displaces the social relations and organization of their doings. Categories such as "sociocultural differences," "social class," and "racial status" become the subjects...Brief ethnographic glimpses are used as instances or expressions of pregiven categories (P. 31)

In this sense, Smith's critique is resonant with other methodological criticisms that contest the primacy of the variable as the unit of study in sociology (e.g., Blumer 1956). Just as important, however, is Smith's contention that the creation and application of categories must not occur before data collection, but instead must be rooted in the everyday worlds of the subjects studied. These categories should be *emergent*, in a phenomenological and ethnomethodological sense, grounded in the everyday experiences of actors, the social organization of their everyday worlds, and the varying ways by which they react to and navigate this emergent social order. Only by eschewing the practice of imposing what Smith calls "pregiven categories" can the analysis of subjects'

everyday experiences proceed without distortion or interference from the ruling relations—the results of which, in turn, reveal the workings and mechanisms of relations of ruling. Similarly, only by tracing the logics and practices of the ruling relations from the standpoint of local actors can these institutional effects be analyzed in terms of the organization of social actions.

Smith's method confers a number of important benefits. As Hart and McKinnon (2010) assert, Smith's framework is a compelling solution to the Durkheimian quandary that pits individual and society against one another. In Smith's (2004) words:

> Institutional ethnography needs a solution that neither dispenses with individual subjects, their activities, and experience nor adopts the alternative reification of the social as system or structure or some ingenious combination of the two. For institutional ethnography, the social as the focus for study is to be located in how people's activities or practices are *coordinated*...The focus of research is never the individual, but the individual does not disappear; indeed, she or he is an essential presence. Her or his doings, however, are to be taken up relationally. (P. 59)

Because neither individuals nor emergent social structures are neglected, agencies and constraints are able to coexist alongside one another. Individuals are active navigators of their everyday worlds, but their options are constrained and these worlds are organized by factors beyond their control. Its phenomenological and ethnomethodological focus, moreover, emphasizes the coordination of social actions, meanings, and practices among local actors, but also emphasizes how social structures emerge from the social organization of local contexts and become institutionalized relations of ruling, which then reciprocally influence many local settings. Finally, findings are situated in their local contexts, but the organization of these findings are traced back to the ruling relations, thus yielding generalizable knowledge about translocal forms of social organization while

also demonstrating how these extralocal forms of social organization unfold in specific contexts.

A Nested Inquiry

Such a sociology provides an ideal method for examining uses of digital technologies in schools, especially in light of the current limitations of previous literatures. As Smith herself contends, institutional ethnography is a particularly productive method when the group whose standpoint is used to enter the institutional field is a marginalized or subjugated population. Although many successful institutional ethnographies have followed Smith and begun from the standpoint of women (e.g., DeVault 1991), I have argued that adolescents, regardless of race and class, may also be seen as a marginalized group, and past institutional ethnographies have successfully begun from the standpoint of youths as well (e.g., Best 2000, 2006, 2016).

At the outset of my fieldwork, I had anticipated that I would focus primarily upon students and their experiences with educational technology—and indeed, my research only confirms that no examination of educational technology is complete without a detailed account of students' experiences, which I provide in Chapter 6. But it quickly became apparent to me that many of the crucial interactions and decisions regarding educational technology are formed *outside* the classroom, in the absence of students. Even though students are always present as an imagined audience—constructed through evidence, anecdotes, and speculations, as they were in the Catholic Academy workshops I observed on my first day of fieldwork—what students ultimately confront in their everyday classroom experiences is the culmination of a long process of negotiation and

struggle among adults with a shared investment in serving the "best interests" of students. At the same time, however, these adults—teachers, administrators, parents, and other interested parties—are also competing amongst themselves to advance their own unique interests, and impose their own particular vision of how the work of education should proceed.

This finding prompted me to consider a modified approach that did not rely solely upon students to set the course of the inquiry. As I will argue in Chapter 6, so much of the logic of schooling is hidden from students that they found many features of their everyday worlds to be baffling. I therefore sought explanations from educators and other adults regarding the reasons for organizing the educational experiences of students in the ways that they were organized. But they themselves were baffled by some of the ways by which their work experiences were organized. They, too, were marginalized in certain ways. Even though Smith explicitly identifies educational institutions to be among the "ruling relations" of society, educators—and teachers especially—are more than mere agents of these ruling relations.

I therefore began to think of my study as a "nested" institutional ethnography that began from the standpoint of students but also incorporated the standpoint of teachers. This was necessary to account for the dual role of teachers. On one hand, they are institutional actors, implementing and upholding an order that marginalizes young people; but on the other hand, they are in some ways marginalized themselves. As many scholars have argued, teaching has long been a feminized profession. More than simply a greater percentage of women than men, an occupation that has been feminized is one

requiring skills at which women have been historically presumed to be superior (e.g., caring, nurturing). Such jobs usually pay low wages, are seen as less skilled than masculinized occupations, and are subject to strong external controls which minimize the worker's autonomy (e.g., Apple 1985).

In short, while I continued to use the student standpoint to determine the course of the inquiry, tracing the problems and concerns of students back to their institutional origins, I also used the problems and concerns of teachers to open up new areas of inquiry that students had not identified. I especially relied upon the testimony of teachers to set the course of inquiry when they spoke of teaching as work. This maneuver, in my opinion, was necessary to explore the many aspects of educational technology which are invisible to students, and led to significant findings that might otherwise have been neglected.

Sample and Sampling Methods

Like many qualitative methods, institutional ethnography does not attempt to obtain a large, representative sample of the phenomena to be studied. The primary relevance of the study lies not in its empirically demonstrated generalizability, but rather in its illumination of the ways by which "the local is penetrated with the extra- or translocal relations that are [themselves] generalized across particular settings" (Smith 2004:42). Hence, the primary criterion for evaluating a successful ethnographic sample lies in the selection of one or more field sites which, through their social locations, provide opportunities for the researcher to make claims supported by observational data regarding the manifestation of broader social processes in local settings.

After my research project was approved by the Human Subjects Review Board at George Mason University, I therefore spent a considerable amount of time thinking about the characteristics that would ideally be present in the schools I studied, researching potential schools to approach, and contacting schools I had identified as desirable field sites. I hoped, at a minimum, to obtain research access to two or more schools varying in numerous respects: setting (rural, suburban, or urban), type (public or private), size of student population, academic achievement of students, racial and ethnic diversity, socioeconomic location, and whether or not there was an institutional emphasis upon the use of educational technologies.

Although I initially focused most of my efforts upon high schools in the Washington, DC area, where I was living at the time, I encountered repeated obstacles to gaining access. My strategy was to contact the head of technology at the school at which I hoped to conduct research, engaging with him or her about the study before I formally applied to conduct research, hoping to gain his or her interest so that (s)he would be willing to advocate on my behalf for upper administrators to accept my request. However, perhaps due in part to my student status, this strategy was unsuccessful, with some rejecting the approach entirely, and others expressing interest but declining to follow up as I attempted to acquire formal approval.

Eventually I turned my attention to a major Midwestern city where I had multiple contacts working in local high schools. This effort was ultimately successful, resulting in formally approved access to the schools I have called Catholic Academy and Public High. As Table 1 reveals, these schools are quite different in all of the characteristics I

Table 1: School Characteristics

	Catholic Academy	**Public High**
Location	Midwest	Midwest
Setting	Suburban/exurban (pop. 15,000)	Suburban (pop. 200,000)
Type	Private, religious	Public
Enrollment	300	2,500
Race/Ethnicity	99% Caucasian	48% Caucasian 46% African-American 3% Hispanic 2% Asian-American
Free/reduced lunch	N/A	45%
Tuition	$6,500	N/A
Average ACT score	25	20
Technological Emphasis	Yes	No

identified to be important, permitting me to compare and contrast the differing everyday environments at these schools, and make preliminary inferences with respect to the effects of such variables as race, socioeconomic class, and public vs. private governance. My only regret in the composition of the schools studied is that it does not include a rural school, as I had hoped to be able to explore the effects of serving a student population that does not necessarily have mobile phone reception or broadband internet access at home. However, I did not receive responses from the rural schools I contacted, and eventually focused my attention solely upon Catholic Academy and Public High.

Although both schools granted research access, the nature and quality of this access varied considerably. Since Catholic Academy had neither a formal application

process nor a district authority to which it was required to answer, gaining access was as simple as writing an e-mail to the school's principal, who quickly gave permission after speaking to my reference. At Catholic Academy, the employee to whom I was assigned was Rita, the school's technology coordinator. Since I did not live in the area, I worked with her to schedule multiple research trips, during which I would travel to the city, conduct as much intensive fieldwork as I could during my visit, and then return home to process the data I had collected. As a result, I collected data at Catholic Academy over a period of nine months, which allowed me to immerse myself in the daily rhythm of the school over time, and interview participants on multiple occasions.

With fewer than two dozen teachers employed at Catholic Academy, who quickly came to know me, I became a familiar figure at the school. I attended faculty meetings and morning assemblies. I observed classes. I ate lunch in the cafeteria, sitting at tables with educators while students chattered and chewed around us. I could walk the halls freely, and would be greeted by most teachers or administrators I passed. I had some measure of rapport with anyone to whom I talked, because even those with whom I had never spoken had seen or heard about me previously. I was even permitted to keep copies of important school documents, such as the faculty handbook and the school's technology budget. Catholic Academy was, in short, a field site with a level of access about which ethnographers dream.

Public High, however, was a much more constrained field site. In contrast to Catholic Academy, which took less than two days to grant research access, I spent four months applying and waiting for a positive response from the district where Public High

is located. Even though it was a much larger school, Public High did not have a dedicated educational technology staff member, and so I was assigned to the school's two learning coordinators, who were responsible for supporting the nearly two hundred teachers at the school. Due to their scheduling constraints, which included responsibility for administering the state's required standardized tests, as well as multiple practice tests implemented throughout the year, I was only present in the school for a period of less than two months. The school building was enormous and under construction; aside from a few well-worn paths, I never learned how to get around on my own. Even if I had wanted to, however, I would not have been permitted to do so, due to security concerns. I was required to check in at an imposing security entrance, wear a large "visitor" sticker on my shirt, and had to be accompanied by a staff member at all times. On one occasion, for example, when neither of the learning coordinators could be reached by telephone to come down to the entrance to accompany me into the school, I was forced to wait for nearly twenty minutes until one of them could be located.

As a result, the data from Public High are more limited than the data I obtained at Catholic Academy. I was unable to conduct classroom observations. Nor was I able to interview any parents of students, as I was at Catholic Academy. I was only able to interview one Public High administrator—one of four assistant principals—whereas I was able at Catholic Academy to interview every administrator at least once, and most on multiple occasions. Moreover, instead of going to interview teachers in their classrooms, as I would have preferred, since it was a space in which they were comfortable and could show me what technologies they had at their disposal, teachers and students at Public

High instead came to me, either in a meeting room in the school's library or in the learning coordinators' offices.

These constraints led to fewer data collected at Public High than at Catholic Academy, yet the Public High data are hardly lacking. Despite the short window of data collection, my time there was very efficiently spent, and I conducted 21 interviews at the school. Furthermore, these data are diverse with respect to characteristics such as age/grade level, race, gender, and subject(s) taught. As a result, although these data are far from ideal, I believe they represent an adequate selection of daily experiences at this large school.

Data Collection

Although I strove assiduously to supplement my data collection with observations, documents, and other media, I correctly anticipated that my primary mode of data collection would be interviews and focus groups. This was desirable because I wanted participants to talk to me in their own words about their daily experiences and the institutional influences thereupon. To encourage this, I preferred to interview participants in the school, where they would be in an "institutional" state of mind. I interviewed administrators by appointment before, during, or after the school day. I interviewed teachers before or after school, or during a free period. I interviewed students before or after school, or during a study hall period. Except for two interviews which occurred at a coffee shop, and a few interviews which occurred via phone or Skype, all interviews occurred in person, in the school, and in a private space which permitted the participants to speak freely.

In selecting participants and constructing my interview guides, I was strongly influenced by DeVault and McCoy's (2003) detailed guide to maximizing interview data in institutional ethnographies. As these two experienced practitioners observe:

> IE interviewing is open-ended inquiry, and IE interviewers are always oriented to sequences of interconnected activities. They talk with people located throughout these institutional complexes in order to learn "how things work." In many investigations, informants are chosen as the research progresses, as the researcher learns more about the social relations involved and begins to see avenues that need exploration. Given that the purpose of interviewing is to build up an understanding of the coordination of activity in multiple sites, the interviews need not be standardized. Rather, each interview provides an opportunity for the researcher to learn about a particular piece of the extended relational chain, to check the developing picture of the coordinative process, and to become aware of additional questions that need attention. (P. 375)

At both schools, therefore, I began by approaching those students and educators who had been recommended to me by the educators to which I had been assigned. I then sought out additional participants both to bring greater social and demographic diversity to my sample (i.e., so that all ages, races, grade levels, and subjects taught were represented) and to fill in gaps in my understanding of "how things work." At Catholic Academy, for example, I discovered that many decisions regarding the school's policies were made by a group of a half-dozen administrators, including the principal and vice-principal, who met weekly. Rita, the school's technology coordinator, was not part of this group, yet it was in these weekly meetings that many educational technology policies were debated and decided. This led me to reach out to administrators whose work had nothing to do with educational technology, but who nevertheless, through their attendance at these meetings and their status as disinterested observers while other administrators debated how to implement educational technology at the school, became valuable informants.

I constructed different interview guides for students and educators. These provided a basic outline, but I did not follow them strictly. With students, I typically

began by telling them that I would be using an informal style and simply wanted to chat with them about their experiences with digital technologies, both at school and at home. With educators, I also stressed that I would be using an informal style, but additionally told them about my past experience in education in order to increase rapport. I reminded both groups that I was an independent researcher not affiliated with the school, and emphasized how seriously I was committed to protecting their confidentiality. I also mentioned to both groups that while I would be asking several open-ended and follow-up questions to guide the conversation, ultimately I was most interested in hearing about what they themselves believed to be most important about their experiences.

I asked participants how they used digital technologies at school and at home. I asked them about how these uses have changed over time. I asked them about the rules, guidelines, and parameters they encountered both at school and at home, and how they reacted to them. I asked them to describe the main benefits, challenges, and obstacles they found in their technology uses. I asked them for their beliefs, opinions, and evaluations of how well educational technologies were being used, and what they wanted to be different. I asked them to describe why, in their opinion, their daily lives were organized in the way that they were. And I asked them to what extent they believed their answers were similar or different from their peers or colleagues. As I conducted multiple interviews at each school, I also included further questions regarding school-specific issues (such as the introduction of Lessonr at Catholic Academy) and sought to confirm for myself to what extent particular opinions, beliefs, and practices were in fact shared among multiple participants.

Most participants, after an initial few minutes of reticence, seemed happy to talk to me, share their experiences, and express their most passionate beliefs. Students, whom I preferred to interview in same-age, single-sex focus groups, seemed to enjoy being forthright with an adult about their feelings regarding their everyday worlds. Educators similarly seemed to enjoy offering their opinions on the various conflicts of interest at the school, what they wished to be different about the school's educational technology policies and practices, and how they had chosen to navigate the constraints they faced as educational workers. Even Miguel, the CEO of Lessonr, who was busy attempting to grow his new company, seemed to enjoy sharing his ideas with me. He was willing to be interviewed on multiple occasions, and I collected nearly four hours of one-on-one interview data from him alone.

However, not all interviews were candid, fluid, fruitful exchanges. Students, especially freshmen and sophomores, sometimes seemed intimidated by me, despite my best efforts to set them at ease. While most interviews lasted between 45 and 60 minutes, a few only lasted about 20 minutes, due to the participants' reluctance to share their opinions and engage in conversation. The concern that I might be intimidating was one reason why I preferred to speak with youths in focus groups, so that they could be accompanied by some familiar faces, would not feel compelled to carry the burden of answering every question themselves, and would have the opportunity to react to, contest, or expand upon each other's answers. Although I sometimes sensed that students were performing in front of their friends, providing slightly different answers than they might have provided in a one-on-one setting, on the whole I believe that I collected better data

from students through focus groups than one-on-one interviews. All focus groups I conducted were successful, in the sense that students were open, honest, and engaged in the conversation, while two of the three one-on-one student interviews I conducted resulted in too much student discomfort to be of much use.

Educators were also sometimes reticent. In a few cases, this was simply because the personality of the teacher was shy or laconic: blunt, brief, , and not the sort easily drawn into an extended conversation. While such teachers were happy to tell me about their everyday worlds, they did not engage in the sort of broad, extended reflections I was able to elicit from more talkative educators. In a few other instances, educators were cautious, even defensive. This was especially the case with administrators, who unsurprisingly strove to present the school and their (sometimes unpopular) administrative actions in a positive light. It was, I discovered, especially difficult to convince administrators to step out of institutional frames, since they were the actors responsible for setting them. While administrators occasionally surprised me with their candor, in most cases these interviews were valuable primarily as an explication of the school's institutional logic as an organization, an employer, and a service provided to parents and students.

Analysis

It did not take long at either school for me to begin to hear the same themes, beliefs, and concerns articulated over and over again by my informants. These were topics that were integral to their everyday lives. They had frequently thought about and talked with one other about these issues. Through their interactions with one another,

many of them had settled upon broadly similar interpretations, explanations, and opinions. This was the case not simply with respect to educational technology in the school, but with respect to their perspectives regarding education and technology in general, which often came up in our conversations (and which I encouraged participants to describe to me).

Responses were hardly homogenous, however. Although I felt at both schools that I had a good understanding of the major issues and stakes after only a few interviews, it was in subsequent interviews that I believe I collected the most useful data. I located other important actors to fill in the gaps of my understanding of major school processes. I sought exceptions, contradictions, and counterexamples challenging the most popular perspectives as well as my own burgeoning understanding of the everyday life of the school. I made my interview questions more specific to the context of the particular school, and sought a deeper understanding of the themes that continually emerged. Follow-up questions which I had not thought to ask in the moment, but which had occurred to me after an interview had concluded, were integrated into subsequent interviews. Through this process, I collected increasingly diverse, detailed, nuanced testimonies, which both animated and complicated the "big picture" I had gained from initial interviews.

Upon the conclusion of data collection, I had over 60 hours of interview, focus group, and observational data. At Public High, I interviewed 1 administrator, 2 support staff, 10 students, and 11 teachers. At Catholic Academy, I interviewed 2 parents, 2 support staff, 7 administrators, 7 teachers (about one-third of the total number of teachers

at the school), and 12 students. Of these, 1 support staff, 4 teachers, and all 7 administrators were interviewed on multiple occasions. I also observed 6 classes, 6 professional development sessions, and a faculty meeting at Catholic Academy. In addition, I interviewed Miguel, the CEO of Lessonr, on 3 occasions, and attended a "sales pitch" of his product to an audience of 25 teachers in his metropolitan area who had expressed interest in using Lessonr.

With the exception of one participant who declined to grant permission, all interviews and focus groups were audio recorded. It was a formidable chore to transcribe these data. However, in so doing, I began to make tentative connections and draw preliminary conclusions, which I was then able to further explore in future interviews. I transcribed interviews and focus groups word-for-word, including phrases such as "um" or "you know," which had the potential, through their deployment, to be revealing. I also annotated observations of body language and tone of voice that were potentially meaningful. Following my most intensive period of data collection at Catholic Academy, I did outsource the transcription of a few of my interviews to a professional, whose transcriptions I checked for accuracy by comparing them to the audio recording and amending slightly as necessary.

I began my formal analysis by employing a process of open coding, reading transcripts line by line to explicate the processes and themes embedded therein. As this was the first large ethnographic study I had conducted, I relied heavily upon Emerson, Fretz, and Shaw's influential (1995) text on collecting and processing fieldnotes. I was also especially influenced by this advice featured in DeVault and McCoy's (2003:387)

essay on interviewing in institutional ethnographies: “The key is to ask ‘How is it that these people are saying what they’re saying?...This methodology allows you to go back to a political-economic context for the answer’...[A]nalysis is always a matter of moving back and forth between collected speech and the context that produced it.”

This process of analysis was overwhelming at first. After my initial period of data collection at Catholic Academy, for example, I attempted to write a memo processing all that I had uncovered. Realizing it was going to end up well over 100 pages, I eventually abandoned it on page 63. As my inquiry into the dialectical relationship between broader political-economic contexts and the words, meanings, and experiences of actors in their everyday worlds congealed into the central claims of this study, however, this process became easier. I began to pull together “observations,” objective, summative statements regarding what I had found in the data (e.g., “Just about every student at Catholic Academy reports or alludes to feeling significant stress over their academic achievement.”) which led to “claims,” linkages between these observations and broader, empirically supported political or socioeconomic processes (“This is indicative of the ‘concerted cultivation’ model of parenting and schooling, which is common in wealthy and middle-class contexts at this historical moment.”) which then led to further questions (“According to my data, what is the relationship between concerted cultivation and educational technology policies and practices?”) culminating in arguments that could be supported by my data (“Technologies are seen by adults as both an aid and a menace to the goals of concerted cultivation, and so they are both heavily used and heavily

controlled. Students' recreational use of technologies provides them with essential emotional relief from the rigors of this lifestyle.")

Having employed a "bottom-up" approach to construct empirically supportable arguments, I increasingly shifted to a "top-down" orientation to weave these arguments into the broader narrative of this work. I engaged in another round of focused coding, looking for instances that compellingly illustrated, complicated, or challenged my preliminary claims. Rather than using coding software such as NVivo, or the more manual processes using index cards favored by other ethnographers, I constructed the text of this study through a process of cumulative "copying and pasting." With multiple documents open on my computer, I selected noteworthy passages from my transcripts and grouped them thematically, continually adding, deleting, rearranging, and tinkering with sections, claims, and quotations until I arrived at an ordering that was clear and compelling. The result, in my opinion, is a study that is true to the core premises, methods, and goals of institutional ethnography.

Limitations

In a reflection of the lessons learned during his thirty years of ethnographic work, Michael Burawoy (2013) proposes several "fallacies" related to the challenge of accurately situating a field site in its broader social context:

> First, there are three traps that await the ethnographer who seeks to comprehend the world beyond the field site: the fallacies of ignoring, reifying and homogenizing that world. Second, there are three traps awaiting the ethnographer who fails to give the field site a dynamic of its own: the fallacies of viewing the field site as eternal or, when the past is examined, the danger of treating the present as a point of arrival rather than also as a point of departure; and finally the danger of wishful thinking, projecting one's own hopes onto the actors we study. (P. 527)

Certain “traps” are more or less germane to this study. The potential fallacy of ignoring the world beyond these schools, for example, is not an especially threatening one, since the explicit aim of institutional ethnography is to uncover the ways by which the obscured processes of that broader world structure the everyday experiences of the local actors studied.

It is a limitation of ethnographic studies such as this one, however, that an understanding of the representativeness, generalizability, and applicability of the phenomena observed in these two schools to the broader field of social activity encompassing youths, schooling, and digital technology uses is partial at best. It is necessary to concede this point in order to reject the temptation to reify or homogenize the world beyond the field site—especially since a central conceptual premise of this study, the ongoing process of neoliberalization, is often itself conceptualized as a reified process of homogenizing social relations.

The findings of this study are suggestive, but not conclusive, of broader processes occurring in American K-12 education. Its utility lay in its commitment to accurately documenting the everyday experiences of its participants, rigorously tracing these features to the broader social processes of which they are manifestations and consequences, and providing thick, detailed data that an exploratory quantitative study could not capture. It is important to remember that schools are unique, diverse social settings, even though they share common features, and that these peculiarities can yield different outcomes in otherwise similar settings.

Yet that does not mean that this study's generalizability is entirely lacking. It is possible, as I will argue in Chapter 5, that even the most idiosyncratic features of these two schools (such as Catholic Academy's attempted partnership with Lessonr) may become far more commonplace in the future. Several theorists, meanwhile, have argued strongly in favor of the generalizability of case studies. For instance, in an article about misunderstandings regarding case studies, Flyvbjerg (2006) specifically addresses this point, citing numerous examples and sources to conclude that "one can often generalize on the basis of a single case, and the case study may be central to scientific development via generalization as a supplement or alternative to other methods" (p. 231). Geertz (1973), meanwhile, argues compellingly that ethnographers at the very least produce valuable insights through the process of generalizing *within*, rather than beyond, their particular case—much as doctors engage in clinical inference to diagnose the symptoms of an ill patient.

It is also important to emphasize that the participants interviewed overwhelmingly did *not* attribute the features of their everyday lives to broader social processes outside the school. As I will show, they instead preferred biological, psychological, or pedagogical explanations for their experiences. When social processes were invoked, they tended to be presented as unique, internal dynamics arising from particular individual characteristics or circumstances, such as the presence of teachers sharing a psychological aversion to "change." Broader social processes, if they were cited at all, often lacked nuance, describing "kids" or "technology" in near-universal terms, conforming to some combination of biological, generational, and technological

determinisms. This study may therefore be likened to others that are, in part, concerned with the misrecognition of the origins, conditions, and stakes in the everyday worlds of particular actors. such as Willis's (1977) sympathetic yet incisive analysis of the working class "lads" who, through their misunderstanding of the social organization of school and work, participate in their own socioeconomic disempowerment.

Although I am critical of several of the deterministic explanations proffered by those with whom I spoke, and skeptical of some of the biological, psychological, and pedagogical rationales invoked by participants, I wish to be clear that I do not dismiss their accounts of their everyday lives. There is a fine line, especially when studying marginalized groups such as youths or teachers, between analytically inferring hidden processes and meanings that may not align with their speech and devaluing these people's understandings of their own everyday worlds. Part of the job of the institutional ethnographer is to use his knowledge of the multiple standpoints and broader social processes to contextualize the understandings of the actors studied. This means, in some cases, not dismissing or devaluing these understandings, but situating these beliefs in a broader context which illuminates, complicates, deepens, or even problematizes them. For this reason, I have clearly demarcated the speech, feelings, and thoughts of participants from my own analytical interpretations, so that their understandings are fully and accurately presented, but are not necessarily taken at face value. In a study in which the types of explanations proffered by the participants were often drastically different from the sociological perspectives that I was applying to my fieldwork, such a distinction is essential.

Two other "traps" identified by Burawoy are relevant to this study: projecting one's hopes onto the study, and failing to treat the present as a point of departure as well as a point of arrival. In this instance, the two are indelibly linked, since I do indeed have "hopes" related to the social organization of young people, schooling, and digital technology uses, and they consist primarily of hopes regarding how the present moment can depart upon a different course than the grim trajectory implied by the continuation of current trends.

I will revisit this topic in greater detail in the concluding chapter. For now, I will simply note that I do not come to this study as an impartial outsider. I worked for three years at the high school level as a technology assistant, then a technology coordinator, in the mid-2000s. Working closely with administrators, teachers, and students—that is, interacting with but belonging to none of these groups—my position was such that I became acquainted with the beliefs, hopes, challenges, and frustrations of each of these groups, and thus acquired a broad perspective of the challenges of implementing educational technologies in the school. Even without formal training in sociology, I found the social factors contributing to educational technology outcomes fascinating. This experience, more than any other, inspired me to pursue graduate studies in sociology. This dissertation, moreover, is a study I have hoped to conduct from the very beginning of my graduate studies.

My personal involvement with this work environment, I believe, confers strengths as well as limitations. No doubt my familiarity with the field oriented me to certain basic concerns and dynamics that an outside researcher would have had to uncover anew. I had

the benefit of years of reflecting upon my own experiences—which, although they predate the time period of this study by 6-8 years, share some characteristics with those I studied. I often found myself reminded by an experience I had, or a statement a former co-worker had said, as my study's participants shared their own stories. My past experience also undoubtedly helped me to build rapport with the teachers and administrators with whom I spoke. I typically introduced myself by way of revealing how my own experience with educational technology inspired me to conduct the scholarly study in which they were participating, which seemed to set them at ease and encourage them to speak more freely with me. The types of follow-up questions I asked, which were often indicative of an understanding of the struggles of educators, seemed also to increase their comfort.

But this past experience also posed several challenges during data collection and analysis of which I constantly strove to remain mindful. There would be, I recognized, a strong temptation to impose my own biases, interpretations, and categories of understanding upon the accounts of my participants. There were several ways by which I might unintentionally distort or co-opt the reports of my participants: (1) through the conclusions about the field I had drawn from my past experience as an educational technology worker, (2) through my standpoint as a privileged adult man, studying marginalized educators and students, and (3) through my own political views, which include an oppositional stance toward the commodification of schooling, as well as the excesses of the project of adults to monitor, regulate, and control nearly every aspect of the lives of adolescents—who, in another historical era or cultural milieu, would be

already regarded as autonomous and competent young adults, but in this era, are deemed deficient and subjugated on this (rarely questioned) basis.

To combat these potential limitations, I reminded myself frequently that the method of institutional ethnography was in fact formulated to combat precisely the sorts of biases I was at risk of imposing upon the data. It entails a commitment to starting from the reports and experiences of a marginalized group, and proceeding through an analysis that rigorously traces the broader social processes that structure the everyday worlds of group members. It was essential, therefore, that I adhere strictly to this method. Conclusions should be drawn not by imposing the previously articulated understandings of myself or others, but from the data itself. I am confident that I have succeeded in this regard, and I expect that succeeding chapters will demonstrate this.

But unlike the myopia that may result from viewing these data through the lens of my own experience, and which I have assiduously worked to avoid, I have chosen to embrace my political orientation not as the weakness with which a positivist would surely regard it, but as a strength. I believe it is necessary to explicitly identify both the violence of the adolescence project and the neoliberalization of schooling, treating these processes not as hypotheses or opinions, but as empirically verifiable conditions. I believe this tactic is important because of my commitment to public sociology, and my conviction that the work of sociology does not end with scholarly publication.

"It is the political task of the social scientist," C. Wright Mills (1959:187) writes in an often overlooked passage in *The Sociological Imagination*, "continually to translate personal troubles into public issues, *and public issues into the terms of their human*

meaning for a variety of individuals" [emphasis mine]. Countless studies have admirably accomplished the former, but neglected the latter. My intention, in this study, is to accomplish both. I will address the translation of public issues into human meaning in my concluding chapter. In the next three chapters, I will trace the private troubles of my informants to the public issues illuminating them. I begin with the struggles of the high school educators charged with using digital technologies to educate young people.

CHAPTER FOUR: "RESISTANT TO CHANGE:" EDUCATORS AND EDUCATIONAL TECHNOLOGIES

The epithet, "resistant to change," was invoked frequently by educators at both schools. "Some people are just resistant to change," educators with a positive orientation toward educational technologies would remark to me with a head shake, as if to lament that their colleagues' intractable myopia was thwarting their vision of a superior, technologically-enhanced pedagogy. "I'm not resistant to change," their colleagues would insist, unprompted, whenever they were about to proffer a skeptical or negative opinion about educational technologies. Clearly, they had heard this accusation before—and clearly, it was an accusation that stung.

After speaking with dozens of educators, it was apparent that those with reservations about educational technology were not "resistant to change" in the way that the accusation was usually intended: a psychological defect borne of a compulsive need to control, resulting in an inability to grow as an educator and better serve their students. They *were*, however, resistant to various socioeconomic changes transforming the nature of their work. They were resistant to the usurpation of their pedagogical expertise. They were resistant to the expectation that they should learn a new set of skills in a work environment that afforded them little time and support with which to do so. And they were resistant to the notion that what was needed most to improve educational outcomes was to embrace the pedagogical use of digital technologies.

The prevailing logic of the schools where I collected data was that this "resistance to change" was the anomaly requiring an explanation. Why do these "resistant" teachers

doubt, complain, ignore, and impede? My data suggest the reasons for these actions were rather straightforward: most teachers, in their evaluation of their own best interests and the best interests of their students, were skeptical that they and their students would benefit from the uses of educational technology they were encouraged to adopt. Most teachers believed that educational technologies were "both good and bad," that they could enhance learning in some situations but not others. If, indeed, as Selwyn (2011:25) argues, the reality at most schools is "a largely bounded and restricted engagement with technology," this study suggests that a major reason is because educators remain "largely bounded and restricted" in their beliefs about the benefits of using it.

It was, in fact, the inverse question that posed a more intriguing dilemma: why do some educators, in spite of their own doubts and practical impediments—many of which they shared with their more skeptical colleagues—nevertheless come to adopt a generally positive attitude toward educational technologies? I argue that these differing attitudes are best explained by a number of circumstances that predispose a teacher to have a positive attitude toward digital technologies. These include positive personal experiences with digital technologies, a preexisting fluency in the use of digital technologies, previous experience in the business world, a distaste for traditional pedagogical methods, and a more creative, independent, or egalitarian pedagogical style.

But above all, educators with a positive attitude toward digital technologies were confident that they could be employed in a way that enhanced, rather than diminished, teachers' status and students' learning outcomes. They saw in digital technologies not a further erosion of teachers' authority and autonomy, or a further commodification of

education. They saw an opportunity to reassert teachers' socioeconomic value through the wise implementation of digital "tools" to produce skilled, thoughtful youths. They saw an opportunity to revitalize education, protect its status as a public good, and resist attempts to transform education into more than an interminable procession of standardized tests. In this regard, they were similar to their more skeptical colleagues. Their differing orientations were ultimately best explained by whether or not they believed digital technologies to be a "tool" of their own occupational (dis)empowerment.

"Not Necessarily Old in Age, But Old in Mentality"

Age was the primary category educators at both schools used to explain the differences in technological aptitude they observed among their colleagues in their everyday worlds. A closer analysis reveals that many of them understood that age was unable to explain all the variance in attitudes and skills that they encountered. However, as the most visible attribute among the multiple factors correlated with these differences, it was the variable toward which they tended to reach whenever they attempted to weave causal relationships into narrative accounts of the uneven uses of technologies among their colleagues.

This was especially the case among the more skilled users of educational technologies at both schools. A Catholic Academy teacher in her late forties, for example, characterized her colleagues in this way:

> There are some people who are, I guess you'd say, resistant, and old teachers—not necessarily old in age but old in mentality—a person who if things are going well, why change that, even though there may be something better on the horizon.

Another Catholic Academy teacher, a man in his early forties, used similar language:

> The positive teachers are attending the demonstrations, they're implementing that into the classroom, they're more integrating the technology in the curriculum. Other teachers look at it as a change—they have a fear of failing, they're not comfortable with technology, and their age has a lot to do with it.

Public High teachers also correlated age, "experience," and resistance to educational technologies, such as this female teacher in her mid-thirties:

> The experienced teachers, I feel they don't like the change, they're afraid of the change, they're afraid of failing. I'm not sure they know where to look for information, or what technology is available for them, or how to implement it in the classroom, or there's a computer problem or the student's laptop is malfunctioning and not everybody's going to be on the same track: 'What if this happens? What if this happens?'

While the above Public High teacher traced her colleagues' resistance to fear, a male teacher in his early fifties suggested ignorance was a greater factor.

> Partly it's a matter of teaching 'old dogs' new tricks; some have not had personal experience with certain technologies—there are some who still think smart boards are nothing more than a glorified white board, because they have probably never seen one in action used in an effective way.

One longtime Catholic Academy teacher even related an anecdote about an older teacher who felt compelled to quit, due to the school's educational technology demands.

> Most of [the resistors] were late career, and so chronologically they were older also. There was one person who literally resigned—he was late career and he was so intimidated by it and he just felt dumb, no matter how much support he got...When you're late career, you want to feel like you have a lot of wisdom and you're kind of a guru for the young people.

These excerpts reveal that age is not itself a causal factor, but rather is seen as a correlate of other factors contributing to resistance that may, in fact, have nothing to do with age--such as a lack of information or support, a fear of failure, and a fear of managing technical malfunctions during a class.

I encountered several older teachers who were quite competent with technologies, in contrast to these age-based stereotypes. The primary difference between younger and older teachers in the data collected for this study lay not necessarily in their technological

competence, but in its origins. Teachers above the age of thirty-five who were skilled in the use of digital technologies tended to cite their literacy as a recent development, which had occurred due to exposure within their family (e.g., a proficient spouse or child from whom they had learned), at school (e.g., graduate degree programs using educational technologies with which they had become familiar), or at work (e.g., a previous job, often in the business world, that had required technological competence). Younger teachers, by contrast, tended to cite a personal and longstanding familiarity, interest, and proficiency with digital technologies, in contrast to older teachers and the institutional relationships to which they attributed their acquired skills.

The most common variable with which age was conflated—as the references above to "teaching 'old dogs' new tricks" and teachers who are "old in mentality" reveal—was a resistance to new pedagogies. Some teachers are "creatures of habit, with some resentment for being told they have to change their habit," one Public High teacher told me, "and then you toss their fear on top of it." "Some people are just change-resistant; some people have personality types that are more low-versatile," a Catholic Academy teacher claimed. "There are some people, they resist any initiative that's a sea change from what they've been doing. 'We've always done it this way. Good enough is good enough.'"

Although educators overwhelmingly individualized and located this variable in the personal psychology or individual methods of the teacher, the comment above reveals that the resistance is, at least in part, due to an occupational struggle over the authority to determine which types of pedagogy are "good enough" in this historical moment—an

obfuscation common to neoliberal frames that emphasize individual factors at the expense of the structural. Because it was largely taken for granted that some uses of technology were more beneficial to learning outcomes than non-technological methods—and that technology use, in general, was beneficial to prepare students for college and the workplace—teachers who did not implement technologies were seen to be in violation of the imperative to always do what is "best" for the students.

But in the everyday worlds of teachers, this ideological imperative to do what is "best" for students continually clashed with the practical exigencies of teaching. Teachers only had so much time, so much energy, so many resources at their disposal—and many teachers felt that these capacities were already stretched to their limits. A major concern of teachers, therefore, was that learning how to use new educational technologies caused additional demands and disruptions to a job that did not tolerate them. Learning new technologies often requires users to take more time to complete work tasks in the short term, until the technologies have been successfully enrolled into their workflow. But these teachers felt there was scarcely enough time for all existing work to be completed. Implementing new technologies during classtime, furthermore, requires teachers to be willing to experiment with new activities which might fail or prove to be inferior. But in these cases, valuable time has been wasted, and their current students have learned less than they would have otherwise. The professional development required to learn how to use these technologies is also time-consuming. At Public High, sessions offered by the district regarding how to use the smart boards provided in most classrooms were optional, and occurred on Saturdays. At Catholic Academy, by contrast, teachers were required to

give up a few of their "free periods" during the school day each month to attend mandatory sessions regarding educational technology.

References to the additional burdens of learning how to use technologies among already burdened educators were legion. Curtis, Catholic Academy's technician, nicely articulated this common sentiment:

> Part of the issue with [teachers] is simply the feeling of being overwhelmed and overworked and underappreciated, I think. So I think when they hear "change," the very first thing they hear is more time that it'll take. When they hear "new technology," when [someone's] like, 'Hey, check this out. Why don't you check this out? This thing is gonna be great for your classroom,' all they hear is, 'I'm gonna spend three hours trying to figure out how this thing works.'

Most teachers appeared to be willing to experiment with new technologies to a limited extent. However, many teachers found the continual cycle of investing time to master a new technology—only to subsequently discover that that particular technology was to be replaced by yet another new technology, which they then must invest still more time to learn—to be frustrating and wasteful. Nicolette, the Spanish teacher at Catholic Academy who had been so loudly resistant to making her instructional video on my first day of fieldwork, spoke poignantly about this frustration:

> I just wish that...again, I feel that we're never allowed to really learn something, practice it, and then put it into place. Last year, we had—oh, I forget what we had, instead of My Big Campus, where we stored all of our [course] information. It took me forever to learn that. And then this year, I get here, and they say, 'Okay, we're not using that anymore.' Now it's going to be My Big Campus, and something else. Then we had the Google Docs in. And maybe it's just me, but I feel like—I'm not opposed to any of it, but give me a chance to learn one thing. I think that's my most frustrating thing.
>
> I understand these things change, constantly. And maybe if you're used to that all the time, then—but even the kids were so upset [about those changes], and I thought, 'Well, gee, they should be used to change, because new things come out all the time.' To get them to embrace using Google Docs was huge, because they just didn't want to change. So imagine somebody my age, trying to adapt to some—you know, I think I consider myself very adaptable—but it just doesn't all—you know, some days it clicks, and some days it doesn't, 'cause it just seems like too much. And then you think, 'Well, do I really want to invest all this time and learn this, when they're gonna tell me [to] do something else in a couple months?'
>
> So that's very frustrating, when you put in a lot of time and make something the way you want it

> to be, and then they go, 'Oh, now that's going away.' I love that phrase—it's 'going away.' Well, where did it go?

Nicolette is willing to invest some time into learning how to use new technologies—but is frustrated when this investment does not yield benefits over the long-term, due to the constantly changing technological offerings at the school. Especially for older teachers such as herself, the return on the time investment is simply not worth it.

Nicolette is surprised that the students were also "resistant to change" when Catholic Academy changed its educational software offerings. She imagines that they would be "used to" it, because she imagines that this resistance is rooted in a psychological aversion to change. But, as I will argue in more detail in Chapter 6, this resistance is mostly attributable to the large amounts of routinization required to succeed as teachers or students, with very little additional time to accommodate experimentations with or deviations from these routines, and little to no tolerance for the work failures or diminutions of quality which may occur as a result. This routinization is not merely a cognitive process, I will argue, but an embodied one. Navigating software with a keyboard or mouse, for instance, relies upon muscle memory. Some also find that they simply "have to" print a paper in order to read it, or handwrite a paper before typing it, due to the disruption that occurs when they attempt a different bodily routine. It is these disruptions and delays, common to students as well as teachers, that elicit frustrations when technologies previously integrated into one's workflow are replaced by new ones. The imperative to do "what's best for the students," in this sense, promotes two behaviors that are ideologically congruent but practically difficult to juggle: doing as much as possible for the students one currently has, and doing as much as possible to improve

one's pedagogy for the sake of future students. Since both are time-consuming, investing time to improve one's pedagogy through educational technologies often comes at the expense of work that could otherwise be invested in one's current students.

Another way in which technologies disrupted work processes and wasted time was through the challenges educators faced in maintaining order in the classroom. Technologies were often seen as increasing the difficulty of this task, as one older, male Catholic Academy teacher related:

> A big part of my job is to make sure [the students] employ [the technologies] efficiently and ethically. They say, 'You gotta keep an eye on these kids.' But they're too good, and they can be places they're not supposed to be. It's very difficult for someone like me [not skilled with technologies] to police the use of computers in the classroom unless I position myself flat against the wall, don't move, and keep an eye on those screens. With twenty-five, thirty kids in the class, that's pretty challenging.
>
> The kids, they just get on different sites, so that's kind of a distraction. As soon as you say [you've graded] an assignment, the first thing they want to do is check their grades, so you know, that's a distraction. The gaming is a tremendous distraction. With a hard copy, it's easy to see if someone's got *Sports Illustrated* open on their desk. But they're much better at [using technologies] than I am. That temptation is more there. It provides that opportunity. It's like anything—some don't give into that temptation, but for other kids it's a huge distraction.

In this excerpt, the teacher admits that students are "much better" at using technologies, yet he asserts that he believes instructing students in how to use them "ethically" is a "big part" of his job. In other words, despite their superior skills, students are to some extent, in his view, powerless over technologies. They cannot resist the "temptation" to engage in non-academic technological uses. The issue here is not teacher autonomy with respect to pedagogical impositions from without, but disciplinary implications from within. The teacher wants to be able to compel students to pay attention to him, and to impose some adult sensibilities upon their uses of technologies. The struggle to achieve these goals is

another reason why some teachers believe the investment in time to both learn and implement technologies is not necessarily merited.

The common attribution of "resistance" to individual factors seems to result in part from the need to explain why some teachers accept the imperative to use technologies without complaint, while others do not. Rita, Catholic Academy's educational technology coordinator, for example, told me that, in her opinion, approximately one-third of teachers she had encountered during her long career were "scouts," who eagerly embraced and experimented with new educational technologies; another one-third were "followers," who would utilize new educational technologies once their efficacy had been more thoroughly demonstrated and they themselves were more comfortable; and the final one-third "are the sort who are going to be resistant no matter what," only using technologies to the minimum extent required, preferring not to use them at all if possible.

While this typology may accurately describe the spectrum of technological integration and resistance among teachers, it cannot explain how or why teachers become "scouts," "followers," or resistors. The prevailing opinion among all types of educators is that the main factors explaining these varying levels of acceptance are age, a psychological "resistance to change," and an unwillingness to do "what's best" for students. The influence of these variables, however, appears to be partial at best, and obscures more salient dynamics occurring in educational work. A better explanation would more prominently emphasize teachers' resistance to the usurpation of their pedagogical authority and the varying cost-benefit analyses that teachers must confront

when learning how to use new educational technologies. Teachers who felt learning would take a long time, felt too busy, or believed their current students would suffer were more likely to resist pressures to learn new technologies. Teachers who achieved good results with their existing pedagogical methods also questioned whether changing them was necessary or worthwhile. Some of the most resistant teachers to educational technologies at both schools, in fact, were excellent instructors, who had won teaching awards and were recognized by colleagues and students alike as uniquely talented educators. These teachers, who had cultivated a successful pedagogical method that had achieved laudatory results, were especially resentful of impositions upon their authority and autonomy.

At Public High, where there was no institutional effort to compel teachers to use educational technologies, resistant teachers could choose not to use them without reprisal. At Catholic Academy, however, where teachers were required to create "tech growth plans" for themselves and were strongly encouraged to take advantage of each student having a laptop, the institutional definition of "good enough" pedagogy included frequent engagement with educational technologies. Catholic Academy teachers who were "old in age" were thus quick to assert that they were not also "old in mentality," in order to protect themselves from the stigma associated with this label. They instead attributed the below-average integration of technologies in their classrooms to their deficient—but growing—technological capabilities. "I work with some people here who are good teachers, but they don't want any waves rocking their boats. They like their comfort zones. They teach exactly what they've taught for some time. And I don't believe I'm

that way," one such teacher insisted to me. "So I'm not anti-change. I just can't process stuff as quickly as you want me to, and I believe the older faculty is right there with me."

Younger and older teachers alike tended to believe that older teachers were deficient not only in their existing level of technological skills, but the rate at which they acquired new skills. In effect, teachers who were not technologically proficient became students, a role reversal which could be very difficult and stressful for these teachers to endure. Another older teacher at Catholic Academy invoked this comparison as he described his struggles with learning how to use new technologies:

> I understand the problem, I think, that tech support face, because they have all these people who get what they're saying, and it's like, 'Let's move on,' and there's the other group that's like, 'You can't move that quickly,' and that's where I see the problem. It's the same as the classroom, with a mega-range of abilities, and it's like, who do you teach to? But you can't differentiate to thirty different kids. That's my issue with support—not that they don't make an effort, and there's much more today—but slow down!

The challenge of teaching students with a variety of skill levels in the classroom, in other words, is also present as teachers attempt to learn the technological skills they require. Just as students who cannot keep up with their peers may be left behind by teachers who target the average student's pace of learning, so too are teachers who require additional support sometimes left behind in professional development, even when assistance is available.

It was striking, as I asked more experienced teachers to describe their professional histories with educational technologies, how frequently they cast the struggle to learn how to use them in almost heroic terms. At first terrified and overwhelmed, they had slowly but resolutely learned how to integrate some uses of educational technologies into their classes, even though they recognized they were still quite far behind in comparison

to some of their colleagues. Nicolette, the Catholic Academy teacher whom Rita had spent two hours helping to make her first video, was among the older teachers who described her history with educational technologies in this way:

> I don't remember any of my education courses even addressing technology—it didn't exist, really, when I was trained. In the beginning, when they handed me the laptop here [at Catholic Academy], and said, 'Okay, here's a projector, here's this, here's that,' I truly felt like I was sinking down into a hole that I would never get out of.
>
> And I kept hearing—it was so aggravating to me to hear: 'You just have to learn by doing.' You know, 'Just do it, and then you'll learn other things.' Because I like to know—I wanted to have everything explained to me. I wanted to cover every situation. And it took me the longest time. And I've heard myself now say that, because even my mother, who is ninety [years old], has a computer, and she does e-mail, you know. But I've heard myself saying [to her]: 'Just keep trying it, and you'll figure out different ways to do things.' And then I thought, 'Oh. Well, maybe I'm finally getting this.'
>
> Curtis [Catholic Academy's technical support staff] will tell you—my first year here, I was his job security, because he was in here every five minutes. So he should be able to say that I've learned something, because I don't call him as much anymore.

Yet even as these teachers improved over time, they still felt deficient in comparison to their more skilled colleagues. And even these more skilled colleagues, in turn, often felt deficient in comparison to their students. As a result, teachers of all skill levels frequently derogated their own abilities, exaggerated their incompetence (e.g., "he was in here every five minutes," helping her to use some technology or another), and pronounced their inferiority—at times with almost ritualistic deference. A poignant example of this sort of self-deprecation occurred one day when I was between interviews at Catholic Academy, chatting with Curtis in his office, when Nicolette, who was in the middle of teaching a class, appeared to ask for his help with a technical problem:

> Nicolette: Can you come show me how stupid I am? I need it—I need it pointed out.
> [Curtis goes, returns less than a minute later.]
> Curtis: Yeah, that was a rough service call [fake stretching]. Had to use my advanced skills: turning the projector on. [Makes a motion as if flipping a switch.]

Nicolette is frustrated that she cannot fix the problem herself, and locates the cause of this inability in her own "stupidity," which she proclaims openly. This is partly for humorous effect, but these sorts of proclamations were a way for her to cope with her real fears and insecurities regarding educational technologies.

Curtis, meanwhile, was not a mean-spirited person; on the contrary, he was quite respectful and friendly. He did not disparage Nicolette's skills to her face, but he did attempt to recruit me into an interaction in which two relatively skilled technology users would joke about Nicolette's technological incompetence—precisely the sort of interaction Nicolette likely fears to be occurring behind her back, compelling her to save face by conveying to skilled technological workers like Curtis that she understands her skills are inferior. Even though Nicolette was not shy about expressing her displeasure with institutional requirements with which she was uncomfortable, as the opening vignette of Chapter 1 demonstrates, in this instance she came to Curtis as a supplicant, feeling required to shame herself in order to ask for his assistance.

In this way, educational technologies are a vehicle through which the occupational attacks against teachers as workers become personalized. Teachers do not wish to implicate themselves personally in the widespread conclusion that the American K-12 educational system is "failing." If they do not feel sufficiently competent with educational technologies, however, they find themselves compelled either to internalize this sense of incompetence or, conversely, to locate the problem externally: in the technologies themselves, their (in)ability to positively influence pedagogy, in the particular circumstances of their work situation that render their use more "bad" than

"good," or in the administrators and educational technology professionals coercing them into using more technologies. It is therefore not surprising that educational technologies evoke a wide range of emotional responses, and that these emotions are seized upon to construct psychological narratives of causation. But these psychological narratives obscure the underlying socioeconomic conditions in educational work that explain why these emotional reactions are so intensely felt.

A "Tool" That Is "Both Good and Bad"

In broad terms, however, educators at both schools were more likely to speak of educational technologies positively than negatively. "It's amazing what people can do with them," a Public High teacher rhapsodized. "People have come in and shown what you can do with them, and it's like, 'Oh my gosh, this is so much better than what we presently have.' People showing me and telling me: 'This is what can be done, and this is how you can use them.'" Many teachers also invoked the imperative to prepare students for their future roles as college students and skilled workers as a primary benefit of using educational technologies. "With the way the world is advancing," a Public High administrator mused, "it's a great opportunity for the students to have. I still think it's a great idea."

However, educators were not universally positive in their evaluation of the pedagogical value of educational technology. More specifically, educators, while allowing for some utility in their classes, usually proffered multiple reasons why educational technologies were often *not* a good "fit" for their particular pedagogical circumstances. As I observed in Chapter 2, there are many studies that have investigated

the myriad pedagogical factors influencing educators' attitudes toward educational technologies (e.g., Churchill 2006; McGrail 2006; Ruthven et al. 2004; Sugar, Crawley and Fine 2004; Windschitl and Sahl 2002). Many of these factors—such as amount of teaching experience, grade levels taught, subjects taught, pedagogical styles, conceptions of their own teaching strengths and weaknesses, and conceptions of administrative or parental demands—were also cited by the 19 teachers and 8 administrators interviewed for this study.

However, a closer analysis suggests that these invocations of pedagogical factors should be interpreted with caution. These factors were typically invoked to speak of a teacher's own attitude toward educational technologies, rather than those of their colleagues. They were also far more likely to be invoked to describe a teacher's skepticism that educational technologies could be more fruitfully employed in their own classes, rather than a justification for more prolific uses. As a result, many of the reports regarding which pedagogical circumstances were best suited to educational technology uses were contradictory. More than one English teacher, for instance, insisted that there was a dearth of technologically enhanced activities that could be done in their subject beyond writing papers, and suggested that math and science classes are more suited to productive technology uses. But multiple math and science teachers claimed the opposite was true: because of the necessary emphasis upon the content delivery of objective information in their subjects, they argued, possible technology uses were limited, in contrast to the opportunities afforded by the more creative, subjective humanities. Claims that technology uses would not "work" in one's classroom were also belied by an

abundance of creative practices and ideas spanning all subjects, grade levels, and pedagogical styles. Teachers, administrators, and professionals such as Rita and Miguel constantly circulated examples of novel and successful applications of educational technology amongst themselves, and proactive teachers sought out further ideas on the internet.

These objections, of course, were not always without merit. At both schools, regardless of their attitudes toward educational technology, the educators with whom I spoke were committed, caring professionals. They took seriously the task of facilitating successful outcomes for students. This was apparent both in their speech as well as their furrowed brows and pensive facial expressions during our conversations. Clearly we were speaking about topics about which they had thought deeply, and which in their opinion deserved to be thought about deeply. Teachers at both schools thought of themselves, first and foremost, as skilled professionals. They often strove to position themselves as a more moderate voice of reason, amidst the more inflamed passions of their colleagues. And they often went to great lengths to impress upon me the complexity and nuance of their opinions.

This effort was best epitomized by the frequent invocation of educational technology as a "tool" which may be "both good and bad" in its application. It is not an accident that so many educators have embraced such a conception of pedagogy and the "bounded and restricted" value of educational technologies, for encapsulated in this language is a number of salient insights.

First, the invocation of the "tool" directly situates the educator as a skilled worker, while the vague yet complex conceptualization of this "tool" as "both good and bad" implies that only an educator with sufficient skill and expertise is able to reliably discern when and how a technology becomes either "good" or "bad." The felt need to claim the authority to implement educational technologies on their own terms is less a consequence of the personal insecurities of specific educators, and more a product of the occupational insecurities of educators as workers. This argument is supported in my data by the numerous occupational constraints educators cited to justify why they do not use educational technologies more frequently—such as a lack of time, training, and resources; frequent and taken-for-granted references to their own deficiencies in using educational technologies; and the scapegoating of teachers who are seen as "resistant to change" as a primary reason for educational deficiencies in their schools. As a group of workers who is often attacked, blamed, and belittled in the political and public sphere, teachers feel compelled to defend their status, autonomy, and expertise from interventions proposed by administrators and educational technology professionals. As a result, there is far more than pedagogy itself at stake in debates over uses of educational technologies: there are struggles over the authority to determine who decides what constitutes good pedagogy in the first place, and the very nature of teachers' work.

Second, the assortment of pedagogical "tools" at the educator's disposal reveals a preoccupation with pedagogical technique that both conceals and reveals. Theirs is a work environment in which the serving the "best interests" of students is touted as the ultimate goal. It is therefore more socially and professionally acceptable to articulate

arguments for or against educational technologies in terms of whether or not the "best interests" of students are served. As a result, a preoccupation with exploitative labor conditions, without also justifying "what's best" for the students, is likely to be seen as a convenient front for the laziness, selfishness, and other assorted personal defects attributed to those educators who are "resistant to change," rather than a legitimate grievance by genuinely overwhelmed workers. Pedagogical arguments against educational technology therefore often obscure practical constraints which in fact exist, but are either delegitimated or taken for granted as "part of the job."

At the same time, however, a closer examination of the articulation of attitudes regarding educational technologies in pedagogical terms reveals the extent to which educators have attempted to defend their socioeconomic position by embracing a complex network of interrelated pedagogical theories. This conception is weakly supported by scientific evidence and is founded upon reductive, deterministic biological, generational, and technological premises, yet was very popular among the educators interviewed. The excerpt below spoken by an experienced Catholic Academy teacher, replete with concepts such as "digital natives" and "learning styles," is illustrative of the kind of professionalized talk educators frequently used in conversations with me:

> [Technology] enhances the teaching style. It goes to differentiated teaching, using the technology. It benefits other students who have different learning styles, so it's part of the multi-modality teaching. It takes it to a higher level. They can use it for inference and critical thinking, which is higher level. It challenges [the students] to a higher level.
>
> It took [the educational administrators] working at the school some time to figure out how to assist in having technology support the program, versus the tech kind of coming first...But as far as how we view the students as being 'digital natives' and knowing how to use it without having to think about it, and the teachers as being 'immigrants' and having to think about it, I'd say we're on the same page as far as that goes.

As I will argue in Chapter 5, the endeavor of educators in recent decades to create new theories of pedagogy—which superficially appear to be complex, scientifically-based advances in the field—is in part an attempt to resist the deskilling of pedagogy, and to take up educational technologies in ways that serve the interests of students and teachers over economic interests. To legitimate this effort, however, educators must operationalize pedagogy as the highly technical, rationalized process of autonomous experts masterfully employing all the "tools" in their "toolkit" to educate young people and their docile, technology-addled brains. I will suggest , therefore, that what is in one sense the laudable resistance to market intrusions seeking to better commodify education in a manner congruent with the Marxian critique of neoliberalism, is in another sense a triumph of a Foucauldian vision of neoliberalism dependent upon a derogatory construction of youths.

Finally, the metaphor of the "tool" discursively places the student in the position of the unformed object upon which the "tool" is working. This is a conceptualization of pedagogy in which the agency, dignity, and humanity of the student is absent. Teachers, of course, do not actually believe their students lack these characteristics, and many spoke warmly and passionately about their students. But this turn of phrase was one of several ways through which the adults comprising the educational technology complex expressed inconsistent, ambivalent, or contradictory understandings of today's youths.

Teachers professed to know young people intimately, drawing upon years of experience in and out of the classroom—yet sometimes spoke of them as frustratingly unknowable, unreachable, and incomprehensible. One Public High teacher, for instance,

frequently contended that decisions to use educational technology should be made by teachers, since they "know [their] students best"—yet referred vaguely at other times during our conversation to "kids today" and "whatever it is they're into." They spoke with awe at how magically tech-savvy young people seemed in comparison to themselves—yet were quick to demean this literacy as an empty skill, in need of adult shaping, constraining, and supplementing, as in the previous excerpt of the Catholic Academy teacher who spoke of how skilled his students were at using technologies, yet asserted his job was to "make sure they employ them efficiently and ethically." They spoke warmly and passionately about their students—yet sometimes evaluated them as minimally competent at best, and incorrigible at worst.

These incongruencies were not random. Rather, they were strategically deployed at various times to strengthen particular pedagogical arguments—whether for or against particular uses of educational technologies—regarding what was "best" for the students. These malleable constructions of youth that appeared to be pedagogical in nature, however, were often politically expedient. Educators, for instance, often emphasized the complex but fixable deficiencies in their students, and in so doing attempted to increase their socioeconomic standing by constructing young people as a problem they themselves are uniquely qualified to solve. They also emphasized the disciplinary problems which sometimes accompanied the use of educational technologies, constructing young people as too distractible and too skilled at concealing their illicit uses of technologies for educational technologies to be successfully employed in the classroom. As I will show in Chapter 5, educational technology professionals tended to question or reject these

arguments. Yet even these professionals' understandings of youth seemed to be similarly calibrated so that their agendas for employing educational technologies in particular ways were "best" suited to successful pedagogical outcomes.

In other words, rather than constructing beliefs about optimal pedagogies and uses of educational technologies around the reality of young people as they are, young people were largely constructed around the pedagogies and uses of educational technologies that adult stakeholders believed to be optimal. These beliefs regarding optimal pedagogies and uses of educational technologies, in turn, seemed to be constructed around the effort to legitimate the superior value their category of educational worker (teachers, administrators, technology professionals, etc.) contributes to the educational process. In this regard, the metaphor of the "tool" acquires a more nefarious meaning. Even though so much of the struggle to determine what goes on in classrooms is expressed through talk regarding the "best interests" of the students, a closer analysis reveals the students themselves are often the "tools" with which educational stakeholders attempt to assert authority, expertise, and power over one another. Lurking in disagreements over what is in the "best interests" of students are the differing socioeconomic interests of educational workers, which are asserted and contested using the language of pedagogy.

Public High: "Anytime There's Technology, It's Not for Us"

Complaints regarding a lack of time in which to learn how to use new educational technologies, a lack of adequate training to support this endeavor, a lack of resources with which to carry out this endeavor, and a lack of pedagogical "fit" with the goals teachers were attempting to accomplish were common at both schools. However, it is

undeniable that teachers at Public High confronted more difficult challenges and impediments than their colleagues at Catholic Academy. In some respects, difficulties that were common to teachers at both schools were more extreme at Public High. In other respects, Public High teachers had to confront unique challenges which did not exist at Catholic Academy.

As subsequent chapters will establish in more detail, both schools had problems with respect to educational technology resources, maintenance, and training. But these were significantly more severe at Public High. Although there were issues with the low quality of hardware and occasionally lacking support, Catholic Academy generally had a sufficient technological infrastructure to support its teachers and students, all of whom were equipped with laptops. They also had a full-time, on-site technician to maintain its technologies, as well as a part-time educational technology coordinator specifically devoted to helping teachers integrate technologies into their classes.

This was far from the case at Public High, where many teachers insisted that they were either unable to use the technologies they wished or had to struggle fiercely to acquire the resources they needed. “I don’t integrate technology into my classes,” one such teacher lamented. “I can’t. I want to, but it’s simply not available.” Another teacher described in detail her struggles:

> I’ve been begging for a projector for years. I bought a projector that didn’t work—my husband made me return it. I told everybody up the ladder, and got nothing. We’ve tried to use smart boards, but my level doesn’t have it. I’m low on the totem pole. I bought my own replacement light bulb for my overhead projector, made in 1977! Seriously, that’s what it says on the bottom.
>
> Today, I’m showing a video. I did manage to wrangle up a DVD player that I purchased myself. If we want technology, we have to buy it. Anytime there’s technology, it’s not for us. We’re not the focus. Our books are ten years old. We’re supposed to be raising test scores, but not using tech. It’s depressing.

The need to provision oneself either by buying one's own technological devices or hoarding school resources was a common assertion. "I'm not supposed to have a printer in my room, but I do," one teacher ruefully observed. "When it broke, [the school] wouldn't pay to get it fixed. I guess I'm supposed to use the printer shared between three different departments on a different floor." "When we find any kind of technology, we have to steal it and not talk about it," another teacher confided. "For a while, I had a super secret cart of laptops—it was wonderful! But then they found out, and then it was gone, never to return."

But it was not the case that all teachers at Public High were poorly provisioned with technologies. Teachers of all subjects acknowledged that the STEM subjects were better supported than the arts and humanities, leading to some widely disparate opinions regarding the school's and district's level of support. "Overall, I'm pretty satisfied," a math teacher told me. "The district does a lot. Repairs are fine—I've never not been able to teach. And I've had no issues with resources. But I have a really good situation. Some of the issues [other teachers] may have, I don't have." Because the school was so large, with nearly 200 teachers, some math and science teachers were more aware of the subject-based disparities than others. "I think sometimes teachers just complain, and don't really try to get it fixed," said one science teacher, in contrast to the numerous teachers in other subjects who described their repeated requests for assistance. "I think district has been good about responding."

Teachers in non-STEM subjects, however, were very much aware of the disparities, and scathing in their indictments of the school's allocation of resources. "We

have a new three million dollar library that we can't use, because it's closed for testing," one teacher told me. "We have beautiful new science labs with unused smart boards. At the beginning of the year, we got an email from one of the assistant principals, offering smart boards. I replied and was told, 'Sorry, those are for STEM classes.'" It was, to some extent, more frustrating for these teachers in non-STEM subjects to know that the school did in fact have some resources available, but that these weren't being allocated so that those who were most eager to use them had access, as one English teacher vented to me:

> They tell us all the time we have four carts [of laptops] for English. But we need two for each class. Then one disappeared. We have a "dead cart" in which all laptops are dead. So it's now condensed into one cart of sixteen [laptops]. And we're the biggest department in the school!
>
> A few years ago, math got one cart to share between [every] two teachers. They don't share with us. We want to share, but then we don't get the stuff back. We hoard office supplies and tech, because they'll always take from us to give it to another area. So we do without, and moan and groan about it. Elementary schools are way worse, I'm sure.

The uneven allocations of technologies led to widespread dissatisfaction—and widespread resentment of those who did not realize that they were among the better provisioned teachers. "There's an inequity in my department and throughout the school, and it's really frustrating," one teacher summarized. "The people who have more in my department still complain. They were complaining at me to tell you [about their lack of resources], on the way here [to this interview]. It was like: 'Really? Seriously?'"

Unlike teachers at Catholic Academy, whose ire was directed primarily at school administrators, Public High teachers tended to blame district administrators for failing to provide enough technologies, technical support, and training. Although they disliked the way in which the newest technologies at the school tended to be used "for show" or to

support standardized testing achievement, they usually indicated that the school's administrators did their best to advocate for more resources at the school. The additional layer of organization, in other words, helped to maintain friendly teacher-administrator relations, since the school was seen as jostling for district resources, and the school administrators were usually seen as advocates for the teachers. This was also due, in part, to a "hands-off" policy that did not mandate the use of technologies and thereby threaten teacher autonomy, as at Catholic Academy. In the words of one Public High teacher, the school's administrators did "a good job of helping, but not imposing."

The school's technical support employee, too, was praised by teachers, in spite of all the broken equipment at the school hindering their ability to teach. "He does a good job," one teacher said. "The poor man is way overwhelmed, because he's supposed to cover the whole east side of the district. There needs to be more of him, and more technology, and more opportunities to train." "We have talented people stretched so thin they can't effectively do their jobs," another teacher said, referring to the school's technical support employee. "My sister is in another district, and they have a [technical support] person dedicated to each school. If something breaks, it's fixed by the end of the day. We don't need more professional development until we have that base fixed first—more technology, and more tech support."

Another reason for resource shortages at Public High was the imperative to use technological resources to meet state testing requirements. The pressure to comply with standardized testing requirements at Public High was a work condition that teachers at Catholic Academy (a private school exempt from state standardized testing requirements)

did not have to confront. The lack of impositions upon teacher autonomy at Public High with respect to technology was perhaps a consequence of the fact that there were many impositions upon their autonomy related to standardized testing, making administrators more reluctant to make additional demands. Teachers at Public High, in the words of one teacher, had "more freedom to teach the way I want to, [but] less so on what I teach."

The mandate to comply with standardized testing requirements affected the use of technologies at the school in several ways. The decision to prioritize equipping the STEM subjects with technologies was, in part, due to the fact that standardized test scores at the school were lowest in those subjects: "Math was our lowest achieving test area, so they got [smart boards] first. Then sciences. English and social studies are lowest on the totem pole." The implication that highest-achieving subjects were, in effect, being denied resources due to their testing successes exacerbated the resentment felt by teachers in these subjects. "I hope STEM uses it. I hope they're pleased with it," one English teacher sniffed with notable derision. "Their carts were used only for testing, to help prep for the test. I'd probably be a little bitter that the only reason I'm getting it is to do better on the test."

Even though the state's official tests were only administered at the end of the school year, the school required students to take monthly practice tests in order to track their progress. As a result, computer labs that were, in theory, available for teachers to sign up for their classes to use were often in practice occupied by activities related to standardized testing, which took precedence over everyday classroom activities. Standardized testing also affected spending priorities. "[The district's] priorities

regarding technology are asinine," one teacher scoffed. "They want newest testing software, the newest version of Excel to display our test scores." Repairs that prevented the taking of these actual or practice tests were also prioritized over everyday repairs. "[There's] not much tech [in my classes] this year, a lot due to being in the middle of this multiyear construction project," a teacher told me. "We used to have this big distraction of labs with sixty computers and multiple classes sharing it [simultaneously]. Now we have smaller labs, but they're all used for testing. There was a big schedule emailed to us with classes expected to do practice testing. So, all of a sudden, technologies I could use to create fun, exciting things for classroom isn't being used for that."

Teachers lamented that standardized testing requirements prevented them from doing many more interesting activities in their classrooms—with and without technologies. Perhaps the most frustrated teacher to whom I spoke was a teacher eager to use technologies, but who found herself trapped in classes teaching content covered on standardized tests:

> I have to teach whatever they tell me to do. I'm teaching English 10 right now, because that's a tested area, and I'm told I 'teach to the test' well.
>
> I want my students to become lifelong learners. I can't say I have that option anymore, but that's what I want. I'm in a big moral dilemma right now, because I can't do that. This year, I've had zero opportunity for that, which sucks. I didn't get into teaching for all this other junk. All my content comes from the test. Once a month, we go online, and we take a test. I still have that undercurrent [of lifelong learning] brewing in everything I do, but I have very limited time.
>
> I want to be more cutting edge, but I'm in a tested area. I can't prove the cool stuff I want to do [with technologies] is related to raising test scores, so I can't do it.

Digital technologies at Public High were, in short, largely enrolled in sustaining a regime of standardized testing, which consumed most of the school's technological resources and thereby precluded innovative uses during everyday class time. Public High teachers

would have been elated to have the opportunity to teach with the relative pedagogical freedom and technological support that their colleagues at Catholic Academy took for granted.

Public High teachers also had to contend with different challenges related to the lower socioeconomic composition of their students. Most teachers observed that a significant minority of their students lacked access to technologies at home, complicating efforts to assign course requirements dependent upon technologies. They also observed that this disparity affected academic performance, as the high-achieving students were more likely to be among the fortunate ones who did have access to technologies at home. "It's tricky using technology for assignments, because some still don't have access. The majority of honors students do. But then again, most are in honors because they have a structured home life, so they can get to a library if necessary," a teacher told me. "But in my regular classes, there's just not that intrinsic motivation to do it, and they don't all have the people at home pushing them to do the work."

The invocation of deficient "intrinsic motivation" and inadequate parental support was common as Public High teachers described the challenges of working with their students. These factors were cited by teachers of color as well as white teachers; however, white teachers tended to be more disdainful in their explanations of why some students did not succeed. At times, these white, middle-class, middle-aged teachers expressed a thinly veiled contempt toward their students, which seemed to be rooted in some combination of derogatory sentiments with respect to race, class, and age. Some even questioned whether these students were as poorly provisioned as they claimed to be.

"What [students] have and what they say they have are different things," one teacher insisted. "They're lazy, but they're texting left and right. The only time a student doesn't have a phone is if a parent took it away, or it's broken. They do have tech at home. Almost everybody." "I don't believe empowering students with technology is smart. Our students are horribly destructive and irresponsible," replied one teacher to a question about whether or not she would support an initiative to provide the students with more technologies at the school. "When they break something, all they have to do is say, 'We're homeless! We're destitute! We can't pay for it!' If you're going to spend money on tech, give it to the teachers." This teacher's sentiment was especially noteworthy because it was fueled not simply by class-based stereotypes, but also a perception of students as competing with teachers over the allocation of scarce technological resources.

Beyond a lack of access to technologies, a lack of basic technological skills among students was also a common complaint among the more technologically proficient Public High teachers to whom I spoke. "What's shocking is the number of kids who don't know some basic functions," one such teacher confessed to me. "It's astonishing. We would expect kids in 2014 to be able to sit down and type an essay. We assume they grew up with this technology. It really woke me up. Is it because our district is lacking? I don't know. But for the real world, we probably need to get that skill across."

This excerpt is notable not merely for the strong feelings of shock and astonishment these well-educated teachers experienced at finding their technological skills to be superior to many of their young students, but also for this teacher's inability to definitively identify socioeconomic class as the primary reason for this discrepancy, as

numerous studies investigating the "digital divide" in technological skills have concluded (e.g., Hargittai 2002, 2010). She imagines that her students would all have acquired technological skills, but also presumes they are incompetent in most other things because of their age. As a result, she is unable to distinguish between the deficiencies attributable to the lower socioeconomic position of her students and the broader deficiencies she attributes to all young people, from which she had previously imagined technological skills to be exempt. Teachers benefit from such a characterization of student incompetencies, as it substantiates their socioeconomic value by situating themselves as those who are best suited to redressing them.

Another challenge that was significantly more difficult for Public High teachers to manage was disciplinary concerns related to the use of technologies. This was, of course, a concern at Catholic Academy as well—one female Catholic Academy teacher, for instance, told me about a recent incident when she had discovered an online chat among male students in which they were discussing the size of her breasts. But at Public High, one teacher spoke of "kids [trying] to rip my arm off when I would take [their cell phone] away." Another female teacher told me that she had, at times, been physically threatened with violence as she attempted to confiscate the cell phone of a male student. "You know how far you can push a kid," a third teacher told me. "There are some kids [from whom] I'm not going to take their phone away. But other kids, they need that."

These descriptions of student attachments and implied violence resonate with a characterization of adolescents as wild and out of control. But, as the above paragraph suggests, there seemed to be a distinction between male and female teachers with respect

to disciplinary concerns. Female teachers spoke of greater struggles in this regard, while male teachers seemed more likely to be able to elicit compliance. This male privilege was not always acknowledged, as in this excerpt from a muscular, deep-voiced, African-American teacher:

> I've had no issues with distraction. I'm a straightforward guy, and classroom management is probably my strength as a teacher. Some teachers try to play games. But I just say on the first day, 'I know some of you are smarter, more creative about getting around different blocks [of websites]. It's simple: follow the rules, or you won't be on the computer. These are the district guidelines.' If I catch them, I'll turn their computer off for the day, and they're still responsible for the work. I really don't have problems. So I think that concern is overblown.

This teacher recognizes classroom management as one of his strengths, but it did not seem to occur to him that this dimension of teaching is "simple" and "straightforward" for him in part because of his physically imposing masculinity. Nor does it seem to occur to him that his style of classroom management may be significantly more difficult for female teachers--whom he implicitly accuses of "playing games"—to accomplish successfully without the additional legitimacy conferred by his imposing physical presence. The use of digital technologies can, in this way, exacerbate disciplinary problems, undermine teaching goals, and even make teachers who are already at a disadvantage in commanding the orderly behavior of students feel unsafe, due to policies requiring them to confiscate cell phones, and the threats of physical violence that may ensue.

Administrators' Struggles: "I Can't Add One More Thing"

Since school administrators were more likely to have considerable credentials and experience in education, they were likely to be "old in age." The unique pressures of their job, however, compelled them as a group not to be publicly "old in mentality," even if

they were privately skeptical of or resistant to the use of educational technologies. Those administrators interviewed for this study presented themselves as welcoming to new educational technologies, wanting, like teachers, to do "what's best for the students." However, they were not necessarily in agreement with teachers regarding the definition of optimal uses, nor did their public pronouncements always adhere to their private beliefs.

Public High's district had chosen to invest heavily in smart boards, a choice which was puzzling given the financial constraints of the district. With costs running as high as $6,000 per smart board, funds which could have been spent to acquire less expensive resources to equip a greater percentage of teachers were instead spent outfitting only a few classrooms with these boards. At the time of data collection, Chromebook laptops cost as little as $100, while digital projectors cost as little as $200. The money invested in one smart board, in other words, could have been directed toward the purchase of as many as 30 projectors or 60 laptops. "The boards are cost-prohibitive for our schools," a Public High administrator told me. "So what most schools do is I might get two boards this year, another board next year, and then it might be two or three years before I think of buying another." The boards were impressive technologies, and the district was able to tout the number of total smart boards in all schools in the district to present itself to stakeholders as technologically advanced. In the schools themselves, however, only a few teachers ended up with advanced technologies.

Administrators at both schools, despite their professed enthusiasm for technologies, were not themselves technologically proficient. They tended not to say this

directly, but it was apparent in their speech, which was dependent upon vague descriptions in place of the specifics employed by those with some level of familiarity and mastery. They were also fond of reminiscing how technologies had advanced during their time in education (e.g., from overhead projectors to digital projectors to smart boards) and often spoke about the newest technologies with awe. Administrators' relative lack of familiarity was also apparent as they attempted to present technologies that had become relatively common as the newest, most advanced offerings. "We're really priding ourselves on trying to become cutting edge. We have the smart boards, where teachers can put up a Powerpoint or a lesson, and show that, and also has this interactive component," a Public High administrator boasted. "The other thing we're moving to and we're high on is we're moving toward becoming a fully wireless district, so students with phones can link up and be interactive right there in the classroom." The invocation of presenting a Powerpoint and providing wireless internet access as "cutting edge," as well as the vague turns of phrase ("this interactive component," "link up and be interactive"), reveals a lack of knowledge to those who are technologically proficient, despite his attempt to "pass" as one who is more knowledgeable.

The assistant principal whom I interviewed at Public High also revealed a lack of knowledge regarding how his teachers felt about technology at his school. While teachers told me they complained about technologies frequently—it was "among the top three things" teachers complained about, according to one teacher—this administrator reported that it was not a major concern. While teachers felt that technical support was severely lacking, this administrator reported that "ninety percent of the time" he had a problem, it

had been resolved within minutes. While teachers felt that it was more important to provision teachers with more technologies and better technical support before providing professional development, this administrator believed professional development was paramount: “It’s really, really good to have the technology,” he said, “but I think it’s more important to have the skill to incorporate that technology, so the teacher can incorporate it consistently.”

Finally, the Public High administrator with whom I spoke identified wasteful or inefficient uses of technologies as undesirable, yet seemed to be unaware of the very ways these misuses occurring at his school. “I remember once talking with my superintendent,” he told me, “and he was saying, ‘I don’t want to spend money, and then not have the teachers use that technology.’ We don’t want a five or six thousand dollar smart board on the wall, and then you’re just sparingly using it.” This, according to multiple teachers, was precisely what was happening in his school, as technologies given to math and science teachers went unused. “If all my budget is going toward buying technology, and I can’t do anything else for my staff,” he said at another point, “you don’t want to do that. Because if I’m the teacher who got the [smart] board, that’s great. But if I’m not, you can see how that would create the animosity there.” Even though he claimed to be aware of this potential problem, that animosity was, in fact, present among teachers in the non-STEM subjects. If this administrator had been more involved with and knowledgeable about educational technology at the school, such statements could have more plausibly been attempts to present the school’s implementation of educational technologies in a flattering light. But this administrator was mostly preoccupied with

disciplining students and interacting with the district hierarchy, and in a school with nearly 200 teachers, a more likely explanation is that he was simply unaware of his teachers' strong feelings about the school's use of technological resources.

Although I was unable to interview a district administrator in order to learn more about the district's initiative, I was able to acquire the minutes of multiple meetings of the district's educational technology committee, which consisted of district administrators, teachers, parents, and even a student. Although there is no way to assess the merits of the committee's concerns, these meetings were full of complaints about deficiencies, belying the Public High administrator's glowing assessment. These included the lack of a "vision" to support the "mission" of the district; the need to reach out to community partners, businesses, and stakeholders; and the need for formal technology standards for teachers, administrators, and staff, as well as higher standards related to equipment, infrastructure, security, maintenance, and wireless internet coverage. Schools in the district were replete with aged technologies that needed to be replaced, and there was a need for greater quantity and diversity in educational technology offerings. The ratio of computers to technical support staff, one participant observed incredulously, was over 1,000 to 1. The subcommittee also wanted the district to consider the use of educational technologies in its teacher hiring and evaluation processes.

The most urgent need identified by the subcommittee, however, was "specialists" who could provide "leadership" in getting the most out of the technologies. There was no one to work with teachers on integrating educational technologies into the curriculum, as Rita did at Catholic Academy. Most of the professional development offered by the

district was related to “assessment literacy,” leaving little time for technology integration. Most of the uses of technology, moreover, were devoted to “formative assessments” rather than classroom integration: “Actual skills are necessary!” one participant asserted. This was true not only for teachers, but for students. The subcommittee wanted students to be able to demonstrate proficiency with technologies, to show that students in the district “knew how to do more with technologies than socializing, surfing the Net, or playing games.”

But sprinkled throughout these minutes were occasional acknowledgements that the financial cost of implementing all these desirable strategies would be prohibitive. The district would have to “think outside the box” or “come up with something innovative” in order to address these needs within the reality of its budget. The findings of this subcommittee, in one sense, are a damning indictment of the inability of district administrators to provide teachers and students with the technological “tools” to succeed, the laments of stakeholders exhaustively cataloguing all that is deficient within the district. But in another sense, they are a wish list that compellingly illustrates the prohibitive costs of implementing educational technologies on a wide and efficient scale. With plenty of other pressing concerns, such as the imperative to meet standardized testing requirements, educational technologies simply could not be a major priority. While it is likely that a few changes recommended by the subcommittee might be adopted, it seems inevitable that the majority of these desires would remain unfulfilled.

But even if Public High or its district possessed the resources to provide adequate technological equipment, support, and professional development, experiences at Catholic

Academy suggest that not all would be well. Meeting basic resource requirements, rather, would likely unleash a whole new set of problems in the form of socioeconomic and professional disputes over the quantity, quality, and nature of implementation.

It was this environment of contestation in which Catholic Academy administrators found themselves. The school, at the time of data collection, was less than ten years old. Having thrived in its early years, despite being located in an affluent area with several other competing private high schools, the school had lost a significant amount of its enrollment during the economic recession that began in 2008, precipitating severe financial difficulties which persisted through the duration of data collection. Nevertheless, the school could not significantly downsize its technological infrastructure, because it was expected in this private school market that all schools would be technologically advanced. Technological resources, and innovative uses thereof, were thus central to the branding of the school.

Belinda, the principal of Catholic Academy, embraced this identity publicly. At an informational session for Lessonr, for example, she introduced Miguel by speaking at length about the educational philosophy of the school, and concluded her remarks by linking Lessonr and the "flipped classroom" pedagogical model to the identity of the school:

> Our mission [at Catholic Academy] fits so well with the Lessonr component, and the Lessonr component comes full circle, and helps us to exercise our principles even better. So I offer that to you so that you understand the relationship between what we're trying to do with kids, what you're doing with kids, and how this tool and how Lessonr can really, really launch us forward into 21st century learning. You've heard about the 'flipped classrooms,' I'm sure. There's lots of buzzwords out there talking about it, but this is the real deal. And I think what Miguel has going is something that we're going to see take off, and take off well.

Privately, however, Belinda spoke openly to me about her personal animosity toward digital technologies, stating in an interview with me that she strives to use digital technologies "as little as possible," on the grounds that she wants to have "a personal relationship [with others], not an electronic [one]"—language reminiscent of Turkle's (2011) characterization of digitally mediated interactions as shallower and less meaningful than other types of interactions. Belinda also told me she was extremely concerned about some of the negative effects which she attributed to digital technology use, such as increasing obesity rates and the danger of internet addiction. She claimed that there were "at least four kids in the school" with internet addictions, and that the parents of one of these students were spending $10,000 per month to treat this addiction. If it was up to her, she confessed, she would "go back to pencil and paper." In her view, digital technologies were at best secondary and at worst antithetical to the Catholic and educational missions of the school: "Jesus isn't on the internet," she once insisted to a business partner of the school while I was present.

The practice of embracing technologies publicly and eschewing them privately at times led to strained relations between the administrators who favored more aggressive uses of technologies, and those upper administrators such as Belinda who were skeptical or resistant. Just as teachers who "did the minimum" were scorned by more enthusiastic proponents of educational technologies, so too were Catholic Academy's upper administrators derided for "doing the minimum" in the sense that they only did what was necessary for the promotion of the school, rather than attempting to institute more substantive changes. Curtis, the school's technical support woker, who was not directly

involved in these struggles but was sympathetic to proponents of the technologies, used the same language commonly used to describe teacher resistance to describe administrator resistance: fear, lack of time, and "resistance to change:"

> Curtis: There's no such thing as change here at Catholic Academy. There's no change management policy. There's no nothing. So man, anything you try to change—I mean even if you were to use good change management principles, and things like that—it's a constant fight.
>
> Me: Why is that, in your opinion?
>
> Curtis: [cautiously] Let me more narrowly define that as a technological lack of change.
>
> Me: Okay.
>
> Curtis: I don't really know about change in the other areas, but I just know from a technology perspective, I'm just guessing it's because upper administration is fairly uncomfortable with technology.
>
> Me: Can you elaborate on that? With what exactly are they uncomfortable?
>
> Curtis: If it plugs in, they're uncomfortable with it. [Laughs.] There appears to be a certain—you know with some users, I've noticed over the years, there's kind of an intimidation factor where they're intimidated by the technology, I guess you would say. They're not sure how it works. They're afraid it'll break. They're unsure. So there's a few members of upper administration who have that struggle, so I think that probably filters down to others in the organization so that—and typically schools anyway—schools in general aren't exactly known for being on the cutting edge of technology. But there's a profound lack of understanding and desire for any change, anything new, anything better. That stems, I guess, from fear. It could stem from time management issues.

As with teachers, administrators' insecurities with educational technologies are psychologized and located in the individual. And, as with teachers, a closer analysis reveals that these behaviors are in fact socioeconomic in origin. Like teachers, administrators confront enormous demands upon their time, are placed in the uncomfortable position of becoming 'students' of new technologies, and are seeking to exercise their own authority and autonomy to implement their vision of what education should be. There are, in addition, other concerns unique to their occupational roles, such as the marketing and branding of the school, or concerns about school liability resulting from uses of technologies.

Two incidents at Catholic Academy illustrate these administrative pressures and concerns. One of my field visits, for instance, occurred during a holiday fundraising drive. The school was attempting to solicit contributions via email, but the specifications of Belinda and the school's board of directors had turned this into a difficult task for Rita, as Rita herself described to me:

> I think [Belinda] was worked up because of the board meeting. She's always worked up. The board's always yelling at her. She's always in trouble with the board, blah blah blah. She just wanted [the email] to work the way [the board chair] wanted it to work, and she didn't understand why it wouldn't work the way he wanted it to work. She just gets [her email] in Outlook, and expects everybody else is doing the same thing. So if it looks pretty in Outlook, it's going to look pretty to whoever is seeing it. She's not taking into account that people are going to be looking at it on their phones.
>
> So we're trying to explain—you know, like she wanted to have all these pictures set up in the email. We were trying to explain why you can't really have pictures in there. Gretel finally just pulled out her phone and said, 'Here. Here's an email on my phone that has pictures. See those blue dots? Okay, that's supposed to be a picture. And you don't see that on a phone.' So then [Belinda] was saying, 'Well, I never look at my email on the phone.' And we were saying, 'Well, people *do* look at their email on their phone.' And I said, 'When I pull [my phone] out and I see that [type of e-mail], nine times out of ten, I just delete the email right off my phone. I never even read it.'
>
> She just wanted to do it the way [the board chair] wanted to do it. The way she said it, and the way Gretel took it, and the way I took it, is: 'Shut up and stop telling me your opinion. Just give [the board chair] what he wants.'

Given the school's precarious financial situation, it was not surprising that Belinda was eager to meet the specifications of the board chair. Without an understanding of the technical requirements to meet these specifications, however, she could not understand why this was not a simple matter to solve, which prompted her to become angry with Rita. This incident illustrates that even upper administrators do not have the autonomy which is often ascribed to them: even Belinda, the principal of the school, is accountable to stakeholders. It also illustrates why those who are skeptical of technologies, such as Belinda, often resist the characterization of technology that it "makes life easier." They

can identify many situations, such as this one, in which digital technologies complicate and prolong their work tasks. Given the high stakes of administrative jobs, these complications and delays are all the more frustrating for them.

Another example of administrative pressures occurred as Rita was attempting to expand Catholic Academy's social media presence. Rita had previously set up Facebook and Twitter accounts for the school, but felt these resources were being underutilized. Taking a standard "school communication plan" to which she had access through her consulting job at Classroom Innovators, she adapted it to the school, and attempted to persuade the upper administrators to adopt a more ambitious plan for engaging with social media, in which multiple participants would make more frequent and compelling posts about activities at the school. At first, this initiative was unilaterally blocked by the school's director of students:

> [The director of students] just killed it. She was very—she didn't want to do it, and it was just gonna be more work for her, and blah blah blah blah blah. That kind of stuff. What I remember is she kind of went off on it, even though there were people who were excited. I mean, I had a number of people who said [afterward that] they felt so sorry for me at that meeting, because of the way she reacted.

When this administrator left the school, however, the opportunity arose again for Rita to pitch her communication plan to the upper administrators. In addition to her colleague, Gretel, the director of curriculum, she also had the enthusiastic support of the director of admissions, who recognized that this initiative would help her to tout the school's benefits to prospective students. These three employees, in their limited experiments, had created posts that had been viewed by hundreds in the school community, which they could show to administrators to demonstrate the potential boon greater social media engagement could bring to the school.

But despite the support of these lower-level administrators, Belinda and the school's vice-principal raised a number of objections which, in Rita's opinion, were intended to block the project:

> So I was saying, 'These are the people I foresee following us. This is the type of information I'm putting out there.' You know, 'Because of this post, two hundred people saw that the basketball team won last night. That's the kind of, you know, 'viral-ness,' however you want to phrase it, we can get when we get more people than just me participating.'
>
> [The vice-principal] immediately went to: 'Well, do we have everybody's consent form for this?' He didn't want to post somebody's picture. You know, like we could have pictures of people who left the school. It wasn't really put like: 'Well, you know what? This is cool. We just have to be careful who we post. Let's find out.' It was put more like: 'Well, have you done this research? Have you done this?'
>
> And it's like: 'That's not my department. That's *your* department that should be doing that!' That's done from his office, so he should be asking that question of himself. It's like: 'Okay, does that mean we stop?'So we kind of had that conversation going on.

The vice-principal, mindful of the school's liability, raises a legitimate concern. But rather than treating this as a detail to be worked out, it became grounds to question Rita's preparation and the viability of the initiative itself.

Belinda then raised a further objection when Rita unveiled an online form she had created that teachers would be able to use to post about innovative projects done in their classes to social media, such as a Spanish teacher whose class had recently spoken with a class in Ecuador via Skype. Speaking to me later on that same day while still rather riled up, Rita described the ensuing conversation:

> Belinda said, 'Who's approving all of this?' So, you know, this big discussion was gotten into about how Belinda had to see anything that anybody in that room sent out or posted. And anything that a teacher sent out, [the vice-principal] needs to look at it. Which is absolutely ridiculous. I know that he's not seeing everything that the teachers send out. Teachers send out stuff all the time, and he's not aware of it. And so Belinda and Gretel kind of got into it a little bit, and Gretel actually said, 'Well, we're gonna have to agree to disagree,' on having approval of any communication that went out.
>
> Gretel and [the director of admissions] were trying to help them understand the effect that immediacy has. That the kids talked to the kids in Ecuador on Skype, and that those pictures were posted during the same class period that it happened, was significant, okay. And if we would've

> waited a day, it wouldn't have had the same impact with our kids as it did having it right away.
>
> The discussion seemed to revolve around: 'Do we want to leave this stuff open so somebody can post something inappropriate?' And that's where it became like: 'What inappropriate [things] are you worried about?' I said, 'Look. I think you're trying to swim upstream here. You do a search on Catholic Academy, you're gonna find bad stuff out there [on the internet] about the school. What this [communication plan] is designed for is to get that *positive* information broader, more out there, than some of this negative stuff that you can't control. You can't stop this, whether it be on a school page or a non-school page.'
>
> And so that's when Belinda got into: 'I'm not trying to stifle people. I'm not trying to control you. I'm trying to protect you, because if you post something and I don't know about it and it's the wrong thing to post, I can't protect you anymore.' You get into trouble, and you know, I guess you get sued or something—I don't really understand [her rationale].

The discussion, according to multiple participants, became heated: while the other administrators who were present observed awkwardly, Belinda and the vice-principal attempted to exert control over the process in a manner that ameliorated risks, yet stifled the creativity and immediacy sought by Rita, Gretel, and the director of admissions. Eventually, Rita told me, she became so upset by the conversation that she attempted to leave:

> Belinda went into: 'I can't add one more thing. If we want to do something like this, let's discuss it. We can implement it next year.' And I'm looking at [the vice-principal], and he looks like a deer caught in the headlights, that this is 'one more thing' for him. And [the director of admissions] is saying, 'I don't see this as 'one more thing.' I see this as something that's going to make my job easier.'
>
> One of the biggest things that pissed me off was when Belinda said, 'And these people are the same people that want me to do a BYOD [a bring-your-own-device technology program, rather than leasing laptops as the school did at the time], and they don't get the other stuff that I need to worry about with the BYOD.' But, you know, she kind of threw her arms at me and Gretel [waving dismissively], saying 'these people.' And it's like: 'You're 'protecting' me, referring to me as 'these people?' I mean, it was like: 'Cross the street—the tech people are coming,' or something. It's like, what the hell does *that* mean? So that statement made me realize: okay, she's not open to this right now, if ever.
>
> So it was at that point that I just folded up my laptop and just said, 'You guys need to discuss all this. Again, this is what I'm doing already. If we're going to expand on this, I need help, and that's the discussion.' Well, [the vice-principal] got pissed at me for wanting to leave. I just didn't want to go through this exercise of uselessness. I think it's a way to submarine trying to do something like this, and it's a roadblock. And Belinda said, 'Rita sees me as a roadblock,' and I said, 'I see this discussion as a roadblock, and whether or not we get around it, I don't know. But it's a discussion for upper administration, not for me. You guys need to talk about it, and you probably don't need me here.' And [the vice-principal] said, 'I want you here. I want your input, in case we

> have questions.' So then for the last half hour, I said absolutely nothing, because it was this type of conversation about 'How are we gonna do this?' and all that.

It is difficult to fault these upper administrators for having concerns about the school's liability or inappropriate posts that would embarrass the school. Belinda's accusation that Rita and Gretel "don't [understand] the other stuff I have to worry about" is, in essence, the same complaint of overwhelmed teachers when they are asked to devote time to learning new technologies—that it impedes and complicates their jobs. The vice-principal, at the height of the teachers' resistance to the Lessonr initiative, would characterize the making of two dozen videos by the end of the school year as just "one more thing" administrators are asking them to do, in contrast to the very different connotation of yet "one more thing" for administrators to worry about invoked above. Just as the structural problems of the classroom (e.g., the challenge of simultaneously teaching students with diverse skills and needs) are replicated as Rita and others attempt to train teachers with different levels of aptitude how to use educational technologies, so too is there considerable overlap in the structural impediments to learning technologies faced by teachers and administrators.

The source of Rita's frustration, in this instance, is the broader context of a pattern of delaying and impeding uses of technologies that would benefit the school. Knowing that Belinda is ideologically resistant to technologies and the vice-principal is overwhelmed by them, she cannot accept their concerns at face value. She had hoped that the benefits to publicity and growing enrollment would outweigh their reluctance, but found it instead to be an "exercise in uselessness." "Everything I thought would happen came true," she remarked ruefully.

Catholic Academy administrators, like their colleagues at Public High, had other competing demands besides educational technologies about which to worry, leading to constant frustrations among those who wished for more aggressive uses of technologies. At Public High, administrators were largely exempted somewhat from these disappointments, since the school's technological deficits could be traced to a lack of resources beyond their control. At Catholic Academy, by contrast, administrators were largely seen to be more autonomous than they actually were. But they, too, answered to higher authorities. They had to contend with the school's financial struggles in a demanding, oversaturated private school market, in which they were rapidly losing enrollment. They had to consider risks and liabilities that others did not, which placed them in the frequent position of feeling compelled to throw cold water upon proposed innovative uses of the school's technologies. And they encountered many of the same fears, insecurities, and impediments to becoming proficient with educational technologies as their teachers.

Conclusion

In his influential historical analysis of teaching as "women's work," Michael Apple (1985) observes that jobs that become feminized tend to undergo a process by which they become lower in salary, lower in status, and the work is increasingly seen as unskilled, "so that control is 'needed' from the outside" (p. 470). It is impossible to fully understand the nature, scope, and intensity of educator reactions to educational technologies without understanding this historical and socioeconomic context. Although educational work became feminized long before the introduction of digital technologies,

in recent decades there has been a dramatic increase in attacks upon the efficacy of public education, the skills and autonomy of teachers, and the need for "accountability" in educational work by means of external evaluations.

Educators are resistant to these attacks upon their professional integrity, and resistant to educational technologies to the extent that these are seen as a means to further erode their status and the value of their work. They wish to enroll technologies into their pedagogical "toolkits," but want to retain for themselves the ability to determine when it is "good" or "bad." They identify numerous ways by which the use of technologies can become "bad:" when learning how to use them does not justify the expenditure of time, when they are used to increase standardized test scores rather than learning outcomes, or when they undermine order in the classroom. But the practical and socioeconomic origins of their concerns tend to be obscured by the overriding imperative to do "what's best for the students," the ultimate goal toward which all pedagogical claims must be oriented. This discourse delegitimizes teachers who wish to draw attention to the external demands and usurpations placed upon them, and encourages the prevalent practice of locating resistance to technologies in individual persons, rather than the socioeconomic circumstances of educational workers.

Having examined these socioeconomic circumstances and their psychological consequences, the question of whether educational technologies can in fact be employed in a way that is in the "best interests" of educators and students remains to be answered. I will address this question in the following chapter, which examines the role of businesses

in implementing educational technologies, and the drastically different methods and goals they seek to encourage.

CHAPTER FIVE: "MAKING A BUCK OFF MY BLOOD, SWEAT, AND TEARS:" EDUCATIONAL TECHNOLOGY BUSINESSES AND THEIR DISCONTENTS

As Buckingham (2007) observes in his original articulation of the educational technology complex, there are many stakeholders external to the school who nevertheless wish to influence how educational technologies are deployed within them. These include "journalists, educational technologists, advisory services, teacher groups and parental advocates, researchers, marketers, non-IT related commercial interests and the extensive local and central quasi-government bureaucracy" (Selwyn 2011:79).

Although the constraints of this study preclude a full exploration of all these external actors and their relations, the timing and largely unrestricted research access which I was permitted at Catholic Academy provided a unique opportunity to explore its partnerships with multiple businesses supporting the school's educational technology operations. There were three of particular note. First, unlike Public High, which was dependent upon one, district-employed technician supporting half of all schools in the district, Catholic Academy had contracted with a company, Tech Solutions, to provide a full-time, onsite technician to support the school's hardware and networking demands. Second, Catholic Academy's school's technology coordinator, Rita, and its director of curriculum, Gretel, also did part-time consulting work for Classroom Innovators, a company which provided planning services to schools transitioning to one-to-one laptop programs. Finally, during the period of data collection at the school, Catholic Academy

attempted an ill-fated partnership with Lessonr, the instructional video startup company founded by Miguel which was introduced in Chapter 1.

In this chapter, I explore the important effects of these business relationships upon the school. I first investigate the infrastructural and financial burdens foisted upon Rita, the technology coordinator, and Curtis, the school's onsite technician provided by Tech Solutions. I then assess the educational technology theories and aspirations espoused by Rita and Gretel, the Classroom Innovators employees. I argue that their vision of educational technology, which rejects the commodification of education through technologies but only concedes partial autonomy to teachers, reveals how educational technology professionals must embrace a highly technical, rationalized definition of teaching and learning in order to legitimate their vision of a pedagogy transformed by educational technologies. I then turn to Miguel and Lessonr, explicating the tenets of his more economically-oriented vision of transforming education through the use of technologies. I conclude with an account of the short-lived partnership between Catholic Academy and Lessonr, a compelling case study of the contentious relations occurring when the differing interests of teachers, administrators, educational technologists, and entrepreneurs collide.

"Jimmy-rigging This Thing:" Maintenance and Repairs

Educational technology is expensive. It was, along with salaries, among the two largest categories of expenses at Catholic Academy, according to the school's financial director. Rita estimated to me that the school's technology budget, when she was first hired, exceeded $130,000 annually. She had, during the intervening period, reduced the

school's expenses to less than $100,000 per year. However, this underestimates the financial burden of educational technology upon the school, as Catholic Academy also had several years' worth of outstanding debt owed to Tech Solutions for their support services.

The dire financial situation of the school was acutely felt by Curtis, Tech Solutions's contracted employee at the school, who was in charge of maintaining "everything that plugs into the wall." Although the school's network was largely functional, there was occasionally a "pretty bad" network slowdown that could not be addressed with available funds. Redundancies that would have improved the efficiency of the network had been eliminated, and the wireless access points throughout the school were in desperate need of an "overhaul." Curtis also reported that the quality of the laptops leased to students had declined precipitously in recent years, and that the school no longer had full warranties covering accidental damage to most of these laptops:

> We've always had full coverage on all these [laptops], including accidental [coverage]. Which means kids can drop them off of the back end of trucks—which they've done. Kids can run over them—which they've done. Kids can step on them in class—which they've done. And everything is covered. Literally anything, except for theft, really.
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> So right now freshmen and sophomores have the ASUS devices. The juniors have the X201s, and the seniors have the X200s. The warranty, the accidental coverage warranty, we let it expire. I say "we." [Pause to choose next words carefully.] The administration let it expire against our counsel, I guess you'd say. And so now there's really no—well, you can't get accidental coverage after it lapses. It's not like you can let it go for six months and then you want it again. ASUS does not offer extended manufacturer warranties at all, because I presume they understand it's a throwaway device and it's just not worth it. Nor could we find affordable third-party coverage so far that will ensure these things at any kind of reasonable price.
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> So essentially we're in this not-so-enviable position to have three out of four of our [student] machines not covered by any kind of warranty whatsoever. So that means that we have to foot the bill for every repair that occurs, to say nothing of having to find vendors that work on it and fix it in a timely manner. So we're taking a lot of risk financially.

In this context, “we” refers to the school—so, in other words, the school had chosen to assume the costs of paying for all student repairs against the “counsel” of Curtis and Rita, who had advocated for renewing the warranty. The reason this was done, according to Curtis, was financial: “The administration [now] doesn’t have to pay upfront, like with a warranty. They can pay [for repairs] as they go, which they prefer.” However, Curtis had spent years servicing student laptops, and because he had found students to be quite accident-prone, he believed this decision was likely to backfire. “We’re hoping that it doesn’t end up costing a whole lot more in the long run than a warranty would have,” he summarized. “I guess we’ll find out.”

With hundreds of laptops and a wireless network to support, there was always something that needed to be fixed. Curtis characterized the flow of repairs as “feast or famine,” noting that especially busy times included the day after returning from long weekends or breaks, “when they’ve had a bunch of time away to break them.” The constant need for repairs, even when there were only a few pending, was disruptive to administrators, teachers, and students. These groups all assumed that the technologies upon which they were dependent would work smoothly. Attendance, grading, and other administrative functions were all hosted digitally. Teachers constructed lesson plans assuming that all students would have working laptops in class, and their own technologies would function properly. Students required working laptops in order to complete required coursework. The demands of the school did not accommodate many delays and disruptions, so such inevitable mishaps caused constant frustrations.

Curtis likened himself to an emergency room doctor at times: keeping track of all necessary repairs, prioritizing them according to importance or urgency, and scrambling to fix as many as he could during a day's work. Network problems, which affected everyone, were most urgent. Following these, administrator and teacher needs tended to be prioritized over student needs. As a result, students were most likely to be required to bear the burden of doing without the technologies required to complete course requirements. As I note in Chapter 6, teachers were often unsympathetic to these technological delays and penalized students for them—even though it was the prioritization of educator repairs over student repairs that usually created such prolonged delays in the first place.

The differing reactions of students and educators to technological malfunctions reflected the differing pressures they felt. "Most kids, I don't trust what they say," Curtis admitted. "Because in four years, I've never had a single student come in and say, 'This is my fault. I broke it.' It's always the cat, the sister, the other student—you know, whatever." Curtis interpreted this as a product of students' carelessness and propensity for deceit, as except in rare, flagrant instances of negligence, students did not get in trouble for accidental damages. But, crucially, the students did not know they would not get in trouble, and feared that they would. Their dishonesty, in this light, is less a product of youthful impetuousness and more a product of the adult gaze, which students associate with punishment even when an accident is truly an accident.

But Curtis found it "interesting" that teachers, by contrast, were likely to blame themselves even when they had not done anything to cause the malfunction: "Like if a

faculty [member] comes in and can't connect to [the] wireless [network], they'll say, 'I don't know what I did, but I messed something up.' Well, you didn't do anything. It's your wireless profile. It's gone. It's not there anymore. They couldn't have screwed it up." The presumption that they are to blame, in this instance, is another reflection of teachers' low evaluation of their technological skills. While students feared the external reprisals of adults, who sometimes punish them for honest mistakes, teachers have internalized a belief in their own incompetence, and therefore punish themselves for malfunctions that they did not in fact cause.

To manage the inevitable need for repairs with minimal disruption to school processes, Catholic Academy's practice was to acquire several additional laptops, which were referred to as "loaners." For any hardware malfunction that did not involve the teacher's or student's hard drive and could not be fixed within a few minutes, Curtis would remove the affected person's hard drive from their own computer and install it into one of the "loaners." This permitted teachers and students to be able to get back to work quickly, with a functioning laptop and their own saved data, while Curtis took whatever amount of time was needed to make the repair on the affected laptop. Once this was completed, the affected person would then be summoned back to Curtis's office, their hard drive replaced into their own computer, and the "loaner" returned.

But this practice, while adequate for the times of "famine" when the number of pending repairs did not exceed the number of loaners, sometimes could not keep up with the rate of necessary repairs. The excerpt below reveals the extent to which Curtis must

scramble to equip educators and students when confronted with shortages of working laptops, chargers, and batteries:

> Curtis: Right now we're in a pretty stretched-out position. I don't have hardly any loaners. I've got like two left. Because of a whole other issue, we don't even have batteries and chargers for the loaners I have, so those are being ordered right now. It's a long story, but we're pretty much stretched about as thin as we can go. That whole list over there [pointing] is students that have loaners. That typically is one or two, and right now it's ten, probably.
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> Me: So what's gonna happen if you get stretched even more? Is it just that some students are going to have to go without computers?
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> Curtis: Well, what I've done so far to jimmy-rig this thing is the last time I was totally out of batteries, I had to go and find teachers who were willing to give up batteries that work for a dead battery. I've got plenty of dead batteries, so if they always stay plugged in, I can borrow their battery and give it to a student.
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> The problem now is that we're literally out of chargers. I just went through a box that students told me were bad chargers over time. I don't always test them., so I went through this box. I found one apparently good charger out of all of them, and I found two that worked most of the time if you angle the thing just right and put something there to make sure that it stayed at this angle.
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> I think what I would do next, if I really had to get a loaner out, was I would see if I could go find another battery from maybe an administrator, and just write their name down and tell them I'll switch it out as soon as I can. And I think I'd probably just tell the student 'You're probably just gonna have to borrow a charger from somebody, or come here and charge it during lunch.' Actually, that's not an option, 'cause I don't have any chargers at all here anymore, so that used to be an option. So yeah, I may ask faculty. I don't know what I would do. But the chargers, we should get those in a couple of days, so hopefully that won't be an issue. We have ten of them coming.

Although I was unable to interview the technician supporting Public High's district, it is difficult to imagine that he does not confront the same challenges to an even greater extent. While Public High did not have to maintain a laptop for every student, as Catholic Academy did, the volume of computers to maintain, through its many computer labs, was roughly equivalent. In addition, Public High's wired and wireless networks had to support a school population that was nearly nine times greater. And unlike Catholic Academy, which had a full-time technician dedicated to hardware and networking maintenance for a user population of about 350, Public High's technician was shared with two other high schools, each of which also had a combined student and faculty/staff

population approaching 3,000. Public High teachers confirmed this assumption by describing the interminable delays they were often forced to endure in order to receive necessary technological repairs. In sum, Catholic Academy had been able to afford the significant startup costs to build their technological infrastructure, but was accumulating significant debt in order to minimally maintain it. Public High could not even afford to technologically equip itself beyond a minimal degree, and could not maintain what few devices they did have in a timely manner.

"We Didn't Choose It Because It's Free:" Software and Support

Catholic Academy's financial difficulties also affected Rita, who was employed directly by the school, and was responsible for managing the school's technology budget. At the time of data collection, Curtis was being paid for his services at the school by Tech Solutions, but Catholic Academy had not paid Tech Solutions for some time. Rita reported that she had been "trying for a year and a half" (as long as she had been at the school) to get a better sense of what was owed, but had repeatedly "gotten the closed door" from the CEO of Tech Solutions:

> [He's] pretty much saying, 'What do I care? I'm charging you stuff, but you're not paying me, so why should I spend my time trying to figure out the bill?' But there's gonna be—at some point, [Catholic Academy's] gonna have to pay the piper. Whether, you know, they go bankrupt, or they actually get—and make a strong school that is financially solid. They're gonna have to go back and pay this. And I don't want them saying, 'You need to be paying me fifty grand a month,' and really we should only be paying thirty.

The extreme lenience with which Tech Solutions was permitting such a financially imperiled school to continue to accumulate debt for services owed was partially explained by an influential social tie: the CEO of Tech Solutions was the brother-in-law of a Catholic Academy board member. Nevertheless, Rita fretted that Tech Solutions

would suddenly withdraw their services from the school, leaving it without support for its formidable infrastructural demands.

Catholic Academy, when it was first assembling its technological infrastructure, could have chosen to purchase, host, and maintain its own servers. The school also could have chosen to employ its own in-house technician, rather than outsourcing these services to a technical support business. Although the specific terms of the agreement between the school and Tech Solutions were not available to me, precluding my own ability to assess the benefits of such an arrangement, Rita—who had nearly twenty years of experience working as an educational technology coordinator in K-12 schools—was critical of this decision. In her professional opinion, the school could have more efficiently managed its own resources, because such third-party technical support companies typically charge high prices for their services. Rita believed the primary reason the school had chosen to be affiliated with such a business was because in the eyes of Belinda, the principal, this affiliation made the school appear to be "state-of-the-art" with respect to its technology program. It was, in Rita's opinion, part of a broader pattern in which Belinda attempted to orchestrate an appearance of overwhelming technological superiority to prospective students and parents, even though the reality was nowhere near this ideal:

> Belinda says constantly—she does this thing that we're a state-of-the-art school as far as technology. But if you ask her about it, her idea of state-of-the-art is that we have a company like Tech Solutions that's supporting us. We have what she thinks is the latest and greatest equipment, and really we don't. I mean, we're returning [laptops] that are basically four years old—and we're gonna have machines that are three years old. So a year from now, we'll be returning those, and it'll be four years. So it's not like we have the biggest and the best. The idea that we have state-of-the-art technology [to Belinda] means that we use the latest version of [Microsoft] Office. No, that doesn't mean you're state-of-the-art! [Laughs.] You know?
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> If you ask what we do, it's very similar to what you would hear at a lot of schools that don't even have a one-to-one [laptop] program. 'Oh, our students do word processing. We do research. They do Powerpoints and present something. We have the Adobe suite. We're state-of-the-art!' Well,

> how many classes use the Adobe suite? 'We really don't know. It's used in digital photography.' How many kids take digital photography? 'Uh, twelve.' [Laughs.] So I do think it has been used as a marketing ploy. [...] This year's been the first year that Gretel and I have really been able to work together, and I've felt like I'm supporting the academic program.

Rita and her colleague Gretel also had part-time consulting jobs with Classroom Innovators, a company that provided advisory and planning services to schools seeking to implement one-to-one laptop programs. The company did not lack for business, and Rita's work had taken her out of the Midwest to schools in states as far away as California and Florida. Some of the advisory services were technical in nature, helping schools and districts to prepare for the sorts of challenges confronted by technicians such as Curtis. But the primary service of Classroom Innovators was to help client schools construct a multi-year plan to implement a laptop program tailored to the unique pedagogical circumstances of the school. Classroom Innovators consultants traveled to the client school, conducted interviews and focus groups to assess the needs and desires of administrators, teachers, students and parents, and provided preliminary guidance for an implementation plan that best supported the goals and wishes of the educational community.

As a result, the desire to use technology to support the "mission" of the school, and the specific classroom goals of individual teachers, was not merely a "marketing ploy" to Rita and Gretel: it was paramount. They favored the aggressive use of educational technologies, but scorned uses of technologies that, in their view, did not take full advantage of the technologies to improve teaching and learning outcomes. They were, in this regard, similar to teachers in their evaluation of educational technologies as a "tool" that should be deployed in tandem with other pedagogical methods to achieve

optimal outcomes. They differed, however, in their evaluation of when and how educational technologies should be used, generally favoring more frequent, creative, and transformative uses. In short, they sought to retain the advantages of permitting skilled teachers to draw upon their "toolkits" to promote "multi-modality" teaching, which accommodated the varying "learning styles" of students. But they rejected the notion of complete teacher autonomy, as they had their own vision of how the pedagogy of "twenty-first century classrooms" should proceed. They sought to integrate educational technology uses with other trends in pedagogy, such as "brain-based learning" and "learner-centered teaching." They wanted technology to support a transformed pedagogy in which the teacher was the "guide on the side" rather than the "sage on the stage."

A few instances illustrate this ambivalence toward teacher autonomy. During one of Lessonr's professional development workshops described in Chapter 1, Miguel and Andrew played an instructional video recorded by a particularly charismatic English teacher. She was very animated and enthusiastic, skillfully integrating small humorous asides ("Get out your study guide. Are you ready? Do you have it? Do I need to wait three more seconds?") into a lecture about *The Lord of the Flies*. "Everyone should teach like that," Andrew gushed in an admiring tone. "Very personal." I happened to catch Rita, who was seated in the back of the room with her face mostly concealed from his view by her laptop, roll her eyes and shake her head discreetly in response to this comment. After the day's sessions had ended, I had an opportunity to ask her why she had reacted negatively:

> I have a firm belief that we should let teachers come to a way of teaching that works well for them—their skills, their curriculum, their students—and not this idea that everyone needs to teach

> a certain way. Maybe [Andrew] didn't mean it that way. But the way I heard it was 'everyone needs to teach as [she] teaches.' Not everyone's going to be comfortable with that, and that's not the message I want our teachers to have. So my thoughts really were: I've got to figure out a way to, you know, try and prevent that kind of comment from happening.

Rita echoed this sentiment repeatedly in our interviews, constantly emphasizing that she believed her role was to support what the teacher was trying to accomplish, not to tell them how to do their jobs.

However, she also at times disputed the right of teachers to teach their classes in particular ways. She was not, for example, especially sympathetic to teachers' concerns about the role of educational technology in undermining classroom discipline, suggesting that maintaining order would not be a problem if the teachers were able to make their students more "engaged:"

> I think [technologies] can be a distraction. But the problem is more that—this is my opinion, both personal and professional—the teachers are distracted as well in their teaching, as they're trying to use it. So I think that's a factor.
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> I also think it's a factor that teachers are trying to teach in the same way. The technology should change the classroom. I don't think technology should be used bell-to-bell, but I think when the technology is being used, the students should be in the driver's seat more. So I think when the teachers are using it, they're trying to do the same thing they've always done.
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> So I think, one, you need to be more comfortable with it. And two, if the students are actively "engaged"—which is kind of the buzzword out there—then they'll be more likely to follow what's going on. If you're engaged with what's going on, you're not going to go check your Facebook or something. The kids are going to be distracted with or without the technology, based on what you're doing in the classroom.

She also complained about the teacher described in Chapter 1 who had not made an instructional video and had openly questioned why Catholic Academy teachers were being asked to "reinvent the wheel," accusing him of wanting to remain a "textbook teacher:"

> He keeps going back to: 'My textbooks are very good. Why do I want to reinvent the wheel?' He's got other stuff going on—he's got a family, he's going to school—and he wants to follow the textbook. I'll be honest: he wants to be a textbook teacher. And so trying to do different things and supplement, and all that, is not something he's interested in. He's a textbook teacher.

> I don't think anybody's disagreeing with him, because we don't want him to reinvent the wheel either. What we're disagreeing is you don't just get to use the textbook, you don't just get to use the CDs in class. And he somehow wants permission to do that. You know, 'What I have is good enough. Let me keep using that.'

"Good enough," in this instance, is not "good enough" for Rita, because this teacher is insufficiently willing to vary his pedagogical approach and to "try to do different things." His competing demands—a family with newborn children, working toward a graduate degree—are acknowledged, but dismissed. In a similar way, the discomfort of teachers experimenting with new technologies is acknowledged, but the burden to "be more comfortable" and to alter their pedagogy to suit the technology is ultimately placed upon the teachers themselves. In numerous ways—their insistence that teachers should be innovative, flexible workers; their minimization of the structural constraints educators must confront; their allocation of ultimate responsibility for changing pedagogies and implementing educational technologies successfully onto teachers; and their espousal of teacher "autonomy" exercised in a prescribed way—Rita and Gretel incorporated neoliberal ideologies and practices into their administrative work.

Rita and Gretel, however, also took seriously an obligation to help teachers become more comfortable and effective using educational technologies. They sought to understand the goals, strengths, and pedagogical style of each teacher, identify the uses of digital technologies that best supported these situational variables, and then to provide the teacher with the skills to implement those uses in their classes. In their roles as the school's technology coordinator and director of curriculum, they also collaborated upon strategic, curricular initiatives that supported the "mission" and "values" of the school. Each teacher at Catholic Academy, for example, was required to have a "tech growth

plan," specifying how they intended to become better at employing educational technologies in their classes over the course of the school year. In these ways, Rita's and Gretel's vision for the school was neoliberal—or, at least, took for granted the need to neoliberalize the school, regardless of whether or not they themselves believed this to be a good thing. But their commitment to the well-being of the school, its teachers, and its students was substantial.

The imperative to properly equip teachers with the "tools" best suited to their classrooms and to the overall mission of the school helps to explain why Rita was so defensive when she described how recent changes to the school's software suite she had implemented had been attributed to financial reasons, rather than pedagogical reasons, by the school community. These included the replacement of Microsoft Office with Google Docs, and the replacement of Moodle with My Big Campus (two applications similar to Blackboard) to provide course management tools:

> I see some good things have been happening. And some of that has been the Google Docs, some of that has been My Big Campus. But it hasn't gone without some pain. Because if you ask Belinda about Google Docs and My Big Campus, she would tell you it's been a freaking mess. And that's because people have complained about it. But if you talk to kids, and you talk to teachers—*now*—they would say, 'It's not that big a deal.'
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> And what's interesting is we didn't get My Big Campus right away last fall. We did go to Google Docs. And so the kids were, you know, just bitching up and down about Google Docs all through September. Then we brought in My Big Campus. The teachers had just been using Google Docs, for their classroom websites, until we got My Big Campus. And then when we got My Big Campus, the kids were bitching about My Big Campus, and saying 'Can't we just use Google Docs?' [Laughs.] You know?
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> So it's like we just need to try and switch to something else, and they'll suddenly like My Big Campus. I actually had a teacher tell me that. But I'm still—you know, I think if you divide the faculty into thirds, and you divided the students into thirds, you'll have that third that just doesn't like any kind of change.

In this excerpt, the logic of the claim that some people are inherently "resistant to change" is revealed. From Rita's standpoint, the only way to explain why one-third of

teachers and students could transition so quickly from disliking to liking Google Docs is if they are reflexively hostile to "change" in the abstract. The notion that their resistance has anything to do with the quality of the software itself is untenable.

While Rita is probably correct that much of the resistance has little to do with the software itself, she either does not have a full appreciation of the demands placed upon educators and students, or does not believe the additional burden of learning how to use software upon educators and students already stretched to their limits is legitimate justification for resistance. It is less about resistance to "change," in the sense that Rita means it, and more about resistance to disruptions of one's workflow in an organizational context that does not tolerate them. Once new software becomes "domesticated" into the daily lives of educators and students—that is, once unfamiliarity with the software ceases to impede or prolong accomplishment of the work to be accomplished using the software—it largely ceases to be a problem, regardless of whether it was "better" or "worse" than the old software. Yet complaints invoking this logic are often dismissed. Since new impositions such as these are common and affect everyone in neoliberal workplaces, but not everyone publicly complains, those who do are labeled self-interested troublemakers, or "divas," as Rita once referred to them. As a result, teacher and student complaints are often articulated instead through the dubious but more acceptable pretense that the new software is inferior to the old software—a ruse that Rita sees through, but which she misinterprets to be evidence of the individual attribute of a generalized "resistance to change."

Rita also perhaps underestimates the role of technology as a vehicle for expressing the anger and anxiety felt by educators and students regarding the precarious financial situation of the school. Beyond the few administrators directly involved in managing the school's finances, Catholic Academy's financial woes were widely known but poorly understood. Rumors that the closure of the school was imminent even circulated at times, compelling Belinda to send out long e-mails to the school community that--although they did not address these rumors directly--were clearly intended to assert the viability of the school for the foreseeable future. Visible manifestations of the dire financial situation, such as cuts to the technology budget, thus seemed to foreshadow further cuts, further deterioration of quality, and further burdens to be imposed upon educators and students. But Rita was adamant that these recent changes to the school's software suite were superior to previous offerings:

> As we look at Google Docs, the collaboration feature of Google Docs fits very well with the mission of Catholic Academy, and what we're trying to do with our teaching philosophy. You can't do that if you load [Microsoft] Office. And what we're doing with My Big Campus is, if you look at My Big Campus versus Moodle, it has such a Facebook feel to it. The kids did not like Moodle. The kids are great with My Big Campus. You can follow people, it has the activity page, and all that. So the reason for moving Moodle to My Big Campus was to make it more student-friendly, versus, you know—students didn't like Moodle at all. Plus we got My Big Campus for free, and Moodle we paid for.
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> Unfortunately, what kind of came out by it was we're only going to Google Docs because it's free. And you know, it's—it's not—no, we're not! We didn't choose it because it's free. We chose it because it has all this stuff to it. And we went to My Big Campus—we actually went to a more expensive content filtering [application], using Lightspeed. And My Big Campus is free with Lightspeed. So we were paying for Lightspeed, and then we got My Big Campus on top of it. Moodle was also free. But we were paying Tech Solutions to host it on their servers and everything. So we no longer had to pay for that server space to use Moodle.
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> So it was actually—there was a financial advantage to doing that. But really that was just kind of a perk. It's sort of like going to a restaurant and saying, 'I'll have the chicken,' instead of the steak. Well, I like chicken! I mean, I'm not getting it because it's cheaper.

Rita's defensiveness is puzzling without a full understanding of her deeply felt commitment not to compromise pedagogy through inferior uses of educational technologies. Certainly she had been instructed to reduce costs, and certainly, if these new software offerings had been more expensive than the software they were to replace, these changes would not have been approved. Rita admits that the changes were partially motivated by the desire to save money, but went to great lengths to insist to me (and the school community) that the primary motivation was to better support teachers and the mission of the school. To her, the suggestion that she would prioritize money over pedagogy was offensive. Failing to vociferously resist this characterization would not only have felt to her to be a capitulation of her values, but would also have undermined the public image upon which her professional credibility was dependent: that she was passionate about educational technology, *but also* about using it in ways that enhanced pedagogy, teachers' status, and a vision of education as a public good.

Rita's commitment to helping teachers was undeniable. She understood that many of them found the adoption of educational technologies to be stressful, and was willing to help them navigate the treacherous process, provided they were willing to make an effort in good faith. Rita's organizational position was one in which she worked closely with, but did not identify with, teachers or administrators. As a result, although she sometimes sided with one group or another in particular disputes, she was also somewhat more likely to sympathize with the pressures upon both groups, and empathize with the reasons and passions motivating the conflict. This often meant, however, that she and Gretel were

caught in the middle of these struggles, as the case study of Lessonr later in this chapter will demonstrate.

Resisting and Enabling Commodification

There were, in addition to the uncritical acceptance and promulgation of neoliberal managerial practices by Rita and Gretel, other aspects of their vision for educational technologies that might be problematized. One such aspect is the fundamental but disputable premise that aggressive uses of educational technology are inevitable, transformational, and desirable in twenty-first century high schools. As Selwyn (2011) observes, the broader social narratives of declining educational efficacy and exploding technological possibilities has led "growing numbers of people [to be] all too keen over the past forty years to seize upon digital technologies as offering a ready 'technical fix' for the problem of the underperforming and failing school" (p. 10). Yet this is a claim that has had decades to be tested and evaluated, and there is little evidence to date that technology will "transform" education in the manner touted by optimists such as Rita and Gretel. The improvement, to the extent that it may exist, is far more likely to be incremental rather than substantial. Selwyn assesses some of the commonly invoked explanations for the apparent failure of educational technologies to transform education—e.g., schools as conservative institutions, the digital disconnect between students and their schools, the technical inefficiencies of teachers, deficient political support for technology in schools—and insists that these factors, while important, cannot have the explanatory power often attributed to them. "So much time, effort, and funding has been put into making digital technologies 'work' in schools and classrooms over the

past twenty years," he concludes, "that these reasons of deficiency *cannot* [sic] solely account for the apparent failure of digital technology in contemporary schooling" (p. 35).

This study, by its focus on individual schools rather than broader evaluations, more conspicuously highlights the important differences between schools in explaining the success of educational technology initiatives. Public High, it is clear, was simply too constrained by a lack of funding, and the imperative to use what technologies they did have to support the project of standardized testing. The school could not have supported an initiative to integrate technologies into pedagogy in the manner promoted by Rita and Gretel, even if it had wanted to. Catholic Academy, by contrast, did have the material and professional resources to support such an initiative, even though these had contributed to putting the school in a tenuous financial situation. This study, therefore, suggests that the cost of provisioning the necessary resources for successful educational technology—including hardware, software, and professional development—is still prohibitive for all but the most affluent schools.

Yet this study also suggests that even schools with above-average technological resources, such as Catholic Academy, confront formidable obstacles as actors within the school fight over the ability to implement technologies in the way they and their like-minded colleagues desire. Teachers and administrators clash over the issues of teacher autonomy and the right of administrators to impose further demands upon already overwhelmed teachers, including prescriptions regarding what, when, how, and how often educational technologies should be used. Educational technology professionals such as Rita and Gretel find themselves in the middle of such disputes: attempting to carry out

the administration's wishes, yet striving to do so in a way that supports teachers and preserves their autonomy to the greatest extent possible.

But there is another project that will be explored in the remainder of this chapter: the efforts of entrepreneurs such as Miguel to transform education in their own way, which imperils not only teachers' autonomy but the physically bounded organization of the school itself. These efforts seek to "disrupt" the current model of education which has been deemed to be ineffective, wrestle pedagogical authority from skilled teachers who employ their "tools" in complex, individualized, and difficult-to-quantify ways, and to thereby situate education as a commodity that can be better exploited for financial gain. Here, also, technology is envisioned as a "technical fix" for the failing school—but it is employed in a manner that effectively turns it into a Trojan horse, sent by businesses into schools in order to create new markets and reshape educational processes to better suit these interests, in a manner resonant with the Marxian understanding of neoliberalism.

An example of these efforts includes massive open online courses, or MOOCs, which have become increasingly prevalent at the university level. Although some hope that such courses will render educational processes more efficient and successful, early reviews of the literature have shown that they currently fall far short of this ideal and are plagued by many problems, such as low completion rates and unreliable mechanisms for evaluating student learning (Liyanagunawardena, Adams, and Williams 2013). Lessonr, I will show in the coming sections, may be seen as a hybrid of MOOCs and instructional video portals such as Khan Academy, and as such is significant as an early attempt to

introduce into K-12 education a new, physically unbounded arrangement of teaching and learning.

Rita and Gretel's beliefs regarding optimal uses of educational technologies cannot be fully understood without also understanding the effort of entrepreneurs such as Miguel to advance their own interests in education. Although Miguel made a concerted effort to tout the pedagogical methods most suitable to his product, Catholic Academy teachers (and teachers at other schools in the same metropolitan area whom he also approached) were largely not convinced. They viewed his agenda, superficially empowering to them in the form of "royalties" for their instructional videos, as antithetical both to their occupational desire to remain skilled workers as well as their vision of what good pedagogy should be.

Rita and Gretel's attitudes toward educational technology, in this sense, are an attempt to welcome educational technology into the school without jeopardizing teachers' autonomy or a vision of education as a public good. They sought not to directly resist the intrusion of technologies into education by market forces, but instead to shape the uses of these technologies to support the interests of teachers and students. But this is a risky maneuver. It presumes that technologies can, in fact, be manipulated to support teachers, even when the intent is to undermine teachers. It also permits entrepreneurs such as Miguel to enter schools to publicize their products and the vision of pedagogy supporting them. In fact, it is difficult for professionals like Rita and Gretel *not* to give entrepreneurs such as Miguel an opportunity to pitch their products, because of their firm belief that almost all uses of educational technology can be productive if employed in the right

contexts. But these confrontations between educators and "disruptive" businesses can easily spiral out of control, as the case study of Lessonr will show.

Another critique that may be leveled against educational technology boosters such as Rita and Gretel is their failure to consider the primacy of broader social and socioeconomic factors over individual factors in describing their work experiences. Rita was among the most adamant that the individual attribute of "resistance to change" best explained the resistance she encountered among teachers. From her standpoint, this was a plausible interpretation of the discontents of teachers. The evidence of the previous chapter, however, suggests that this resistance is best characterized as mostly socioeconomic, rather than psychological, in its origin.

One of the reasons why Rita and Gretel conceptualized the resistance they encountered as an individual attribute was because they were extremely fluent in the "best practices" of pedagogy promoted by commentators popular among educational practitioners. Because Rita and Gretel's understanding of pedagogy—replete with such jargon-laden concepts as "digital natives," "learning styles," "multi-modality teaching," "individualization," and "learner-centered teaching"—adhered to the professional consensus regarding optimal pedagogy (and the use of technologies to support it), it simply never occurred to them that deviations from this conventional wisdom could be superior. Teachers who truly cared first and foremost about their students, in their minds, were familiar with these concepts, and were passionate about applying them to their teaching. Teachers who did not sufficiently care were either ignorant or stubbornly embracing inferior methods in order to support their own selfish aims.

The marriage of educational technologies with these trendy pedagogical "buzzwords," as Rita sometimes referred to them, was one of convenience. Both benefitted from the legitimation they conferred upon each other. But a consequence of this discourse was to transpose what was, in large part, a struggle over resources and labor into a struggle over pedagogical theory. Educators therefore lacked a full understanding of the socioeconomic stakes. In psychological terms, "resistance to change" explained the resistance of some to the introduction of educational technologies. In socioeconomic terms, however, this anxiety and resistance is much more than a mere byproduct of personality. In pedagogical terms, it seems both laudable and reasonable to expect that educational technologies could be employed to support education as a public good. In socioeconomic terms, such an endeavor seems difficult and dangerous, perhaps even impossible.

The erasure of socioeconomic factors, the emphasis upon individual teachers being responsible for transforming their pedagogy with technologies, and the highly technical, rationalized, professionalized conceptualization of optimal pedagogy is resonant with a Foucauldian vision of neoliberalism. Without a full understanding of the socioeconomic factors, professionals such as Rita and Gretel appear to be voices of reason and moderation, occupying the middle ground between the knee-jerk resistance of myopic, self-interested teachers, and the empty pedagogies of (differently) myopic, self-interested market actors. This study, however, suggests a more complicated, sobering arrangement. As market actors employ technologies to co-opt pedagogies in a manner more suited to commodification, teachers, administrators, and educational technology

professionals such as Rita and Gretel are strategically united in their resistance to these intrusions, yet tactically divided. These differing tactics are the result of their varying socioeconomic positions and pressures. While some teachers resist technologies entirely, administrators welcome them so that the school will appear to be "state-of-the-art," even if they are personally resistant, and educational technology professionals and other teachers welcome them as potentially transformative pedagogical "tools."

But those who welcome technologies into the school must contest the ways entrepreneurs such as Miguel wish to use them within the school, as these uses of technologies would undermine educators' socioeconomic status and pedagogical authority. To do this, however, they must increasingly rely upon a technical, rationalized, pseudoscientific conceptualization of teaching and learning. Although this reasserts the authority of educators as skilled professionals, it is essentially a means of resisting the Marxian project of neoliberalism by way of embracing the Foucauldian project of neoliberalism. It is a project that takes for granted the imperative of workers to bear the burden of change, constrains teachers' autonomy, and attempts to rationalize the learning process. In the words of Wendy Brown, a prominent exponent of the Foucauldian theoretical tradition of neoliberalism: "Neoliberalism construes even non-wealth generating spheres—such as learning, dating, or exercising—in market terms, submits them to market metrics, and governs them with market techniques and practices. Above all, it casts people as human capital who must constantly tend to their own present and future value" (Shenk 2015).

This Foucauldian logic is apparent not only in educators' fixation upon pedagogical techniques ("tools") but also in Rita's characterization of the teachers with whom she works as "peopleware:"

> I think some of it is related to the personality of the person in that position. Like I look at McKinley [another local high school], and Tim McNeal is there. He's much more technical, and more hardware-oriented. He'll load any software that you want. But he's not the type to really—he'll sit down with teachers, but he doesn't want to understand—you know, if they're frustrated or that, then he doesn't want to deal with that frustration. What he just wants to do is tell them how they can do stuff.
>
> Some of it is your job description too. Belinda was showing a donor around this week, and she introduced me, and she said, 'Rita is tech--she works with the teachers.' I mean, she has me there, she wants me to work with the teachers. And so that is what she sees my role as. I don't know what Tim's job description is. But I just know that he spends much more time with hardware than he does with the 'peopleware.'

Rita, as was typical for her, invoked "personality" as a primary determinant to explain the differences she noticed in her everyday world. The difference between herself and Tim, in her view, is a willingness to engage with the frustrations of teachers. But she also emphasizes that her job, as she and her boss see it, is to work with "peopleware." Rita believes she is alleviating anxieties and improving pedagogies, but she also is, in another sense, cleaning up the emotional damage wrought by market transformations in educational work.

Rita's role is therefore deeply ambivalent. She does not want education to become a commodity, nor for educational technologies to be an agent of this commodifying process. Yet she must make teachers, students, and pedagogical processes rationalized and compliant in a different way (i.e., through her pedagogical theory) in order to legitimate her vision of an uncommodified pedagogy. She also, through her emotional labor that neutralizes teachers' frustrations, performs a crucial task for entrepreneurs such as Miguel, since these frustrations can culminate in organized resistance, as they were at

Catholic Academy during the ill-fated partnership with Lessonr. In this way, educational technology professionals such as Rita may become enablers of the very commodifying process they hope to resist, raising the question (which will be explored in the concluding chapter) of whether it is in fact possible to use educational technologies in the widespread, supportive, teacher-enhancing ways Rita and Gretel envision.

Lessonr: "Catch the Wave and Then Ride It"

In this section, I explore Miguel's effort to "disrupt" the educational process through an examination of the aims, business model, and marketing strategies of Lessonr. Although Catholic Academy educators found Miguel to be condescending in his behavior toward them, he was quite respectful and accommodating with me, frequently agreeing to interviews and speaking candidly about his hopes for the future of education. His testimony is a revealing look into the logic and ideology of those who seek to use educational technologies in ways that threaten the authority of educators—a development which, in the view of entrepreneurs like him, is largely for the best.

Miguel espoused a rags-to-riches story for himself, emphasizing his background as a second-generation, working-class, Hispanic immigrant. He completed his education with a doctoral degree in the late 1980s, and then founded a software company which, in his words, was started with only "three thousand dollars and an idea." This company was successful, merging "three times over until we became a division of a four billion dollar public company." Tiring of the international travel his position required, he resigned in the early 2000s, took some time off, and then took over another struggling technological company. He oversaw the revitalization of this business: "growing to a point where we

were the largest in the world [in its market], a quarter million dollar company." But he tired of this job as well: "It wasn't very academically interesting. It was a job, and it was interesting. But, you know, I had done that. I'd climbed that mountain. And it was time to go climb something else."

Miguel was also passionate about education, attributing his upward mobility to the educational opportunities he had received as a youth, and having parlayed his financial success into a position on the board of a local college. The idea for Lessonr, according to him, was conceived when the major science center in the large metropolitan city where he was living at the time expressed interest in making him their CEO:

> The Science Center had approached me on being the CEO for the Science Center. And they're a twenty million dollar organization that is constantly in trouble with money. There's just not enough of it, and they take half of their money from the city. And in analyzing if I wanted to be CEO of that organization or not, I figured out that they generate a lot of content themselves. And so the genesis was, why can't we leverage the things that we do and sell them to other science centers around the country, right? Prepackage them, and sell them.
>
> And so, initially, I came up with "Lessonr for Science," actually, and showed them how we could generate somewhere between ten and twenty million dollars a year with their branding on it. And that would be for kids directly, or for any other science center to use anywhere else. And they were really impressed with it.
>
> But I did something that I—you know, just for protection, I copywrote all of it and trademarked all of it to myself before I showed it to them, and then said, 'If you hire me, or if I want to be hired, then I'll use it here. If you don't, then it's my idea—see you later.' And at the end of the day, they decided that they really just wanted a museum curator, and not an entrepreneur, you know, in that position. Which was fine by me. I mean, I wasn't in need of a job at the time, or anything else. But it got me curious, thinking about what are the greater potentials.

Although it was difficult to determine to what extent Miguel may have been exaggerating his history, his polished demeanor, along with numerous turns of phrase—the consistent invocation of the net worth of an organization, the attention to "branding" and copyrighting, the insinuation that the Science Center "takes" money from the local government, rather than earning it from the free market—marked him as an experienced

and committed businessman, with a strong preference for the privatization of educational processes.

Miguel insisted that he was seeking to create a product that benefitted everyone: "a win-win-win...[a] win for the teacher, [a] win for the students, and a win for the business." He believed he was capable of doing this because he was "[in] a position where I don't have to make a lot of money," due to his preexisting wealth. From the beginning, however, whether as a marketing tactic or a genuine belief, Miguel understood that he would have to present his product as an agent of superior pedagogy. He did this by linking his idea for an instructional video portal to the trendy but still relatively new pedagogical method of the "flipped classroom." This method claims to "flip" the activities that occur in school and at home: students watch videos of their teachers lecturing at home, rather than in class, while doing the activities previously done as homework in class, where the teacher can provide individualized attention and assistance. It was difficult to determine to what extent Miguel actually believed this pedagogical method was superior, and to what extent it was simply a convenient way to promote his product. Regardless, he spoke of this new pedagogical method as a "wave" to be "caught," and the few teachers who had embraced the flipped classroom model as "pioneers:"

> As you do background research for any project, you have to decide where the key components are, where the trends are. I mean, it's hard to generate a trend. It's easier to sort of catch the wave and then ride it to a certain point, or you know, accentuate it in some way. And so flipped teaching was that end goal for us. What we found was there weren't any good tools out there for flipped teachers.
>
> At most, there are probably only about 6,000 teachers that are doing any kind of flipped teaching today, out of I don't know how many hundreds of thousands of teachers there are the United States, if not millions. So it's a very small number, but an important number to work with, because they are the pioneers. So if I can satisfy the pioneers who are very picky, I could probably satisfy

anybody.

In this excerpt, and in other conversations with me, Miguel articulated a very clear understanding of the market segment of teachers he was trying to reach: not all teachers, but the few thousand flipped classroom teachers who were "pioneers." This focus upon a particular subgroup of teachers helps to explain why Miguel ultimately was not particularly perturbed by the collapse of Lessonr's partnership with Catholic Academy: without the necessary commitment to flipped teaching, Catholic Academy teachers simply did not belong to Lessonr's target audience.

Miguel also was encouraged by the success of other educational video-hosting projects, such as Khan Academy. Educators at Catholic Academy frequently wondered aloud why Miguel expected his paid subscription portal to be successful, when there were plenty of other websites that made such educational videos available for free. But Miguel argued that Lessonr's imposition of a subscription model was an improvement, not a liability, for several reasons. During a public forum delivered to an audience of about twenty-five teachers in the metropolitan area who had heard about his product and wanted to learn more about it, Miguel framed Lessonr's advantage over Khan Academy in terms of making the instructional video market an open space to which any teacher could contribute:

> Khan Academy—you've probably heard about it, and they've got an interesting methodology. But I disagree with them in a number of different areas. I believe teaching is about teachers—the relationship those teachers have with their kids. And Khan Academy is sort of a more, 'Hey, I'm just going to take a couple people, and put this stuff out.' And it's great. But teachers have no control over it. Teachers have—they can't slice and dice it the way they want to deal with it. And I believe teachers ought to have total control, deliver what they want to deliver—to not only their kids, but the kids of the world.

In the same forum, however, public good-oriented teachers suggested that such information *should* be free, a proposition Miguel dismissed in a revealing exchange:

> Miguel: I want to make [Lessonr] inexpensive enough that on a worldwide basis, any kid, anywhere could participate. So what kind of price point do you think—you know, will satisfy an inexpensive model?
>
> Audience member: Free.
>
> M: Free. Free's not good enough. [Audience member laughs.] And the reason is—and I've been in the retail sector—if you give it away, if we give our education away, people will have no value to it. Okay. That's the bottom line.
>
> Now it doesn't mean we have to charge a ton for it. So other than free, what you think a fair price is for a model, where you have a hundred thousand lessons in an online system, the kid has access to unlimited numbers, use it as much as you want—what's a fair number?
>
> Audience: Fifty a year.
>
> M: Fifty a year. Okay. Well, we've kind of settled on $4.99 a month. Right. 'Give me a latte.' The equivalent [per year] of one tank of gas.
>
> Audience member: Is $4.99 going to be for all the subjects?
>
> M: For all subjects, for everything, on a worldwide basis.

Miguel attempted the common sales technique of baiting the audience to estimate a fair price for his product, in hopes that they would overestimate it, so that he would subsequently be able to tout its relative inexpensiveness. But he is unsuccessful because his audience envisions education as a public good, while he implies that education has "no value" unless it is a commodity. Even when he forces teachers to impose a price upon his product, the price they suggest is still lower than the actual price, a fact from which he quickly distracts by likening his product to common, relatively inexpensive, everyday purchases.

Nevertheless, Miguel was confident that people would pay for his product, and that it would be more successful than Khan Academy in the long run. "I probably asked a thousand people [for their feedback] before I started Lessonr," Miguel told me in an

interview. “And I found that if it was truly available at the quality that I was anticipating, people didn't have a problem—parents didn't have a problem—with the price point.” In a workshop with Catholic Academy teachers, he questioned the financial viability of Khan Academy, even though it was doing well and had successfully attracted funding. “My question for them,” he asked rhetorically, “is what are they going to do when they run out of money?” In another interview with me, he likened Lessonr to other technology startups that had taken over an already established market:

> I'm actually pretty grateful to organizations like the Khan Academy, who got a little bit of a head start, because they've actually proven the market for me. And, you know, I always remind people that there was a Yahoo! before Google, there was a—you know, there's always somebody who beats down the path, and then someone else comes along and sometimes can do it better than they can. Netscape was there before Internet Explorer. But you know, somebody else came along to do a little better. And I think the market is so big—not only the U.S., but internationally.

Miguel estimated to me that at the monthly subscription rate he had chosen, Lessonr would require ten thousand subscribers in order to break even, once the costs of storing and streaming all these instructional videos were accounted for. But he had far greater ambitions than this. One idea was to offer Lessonr as a market solution to states plagued by the economic consequences of high school dropouts:

> From a bigger perspective, I’m interested in tackling the non-graduates of high schools in the different states of this country. In [most states], only about seventy-five percent of kids graduate high school. And pretty much, if you don't graduate high school, there isn't much left for you in the market space. And so without a GED, or high school education, or some completed education, you just aren't gonna make much at all. And that costs the state millions of dollars over the lifetime of someone who doesn't graduate high school in support, because they pay less taxes, and [need] public support.
>
> So once we get enough lessons in the system, I'm interested in creating an online curriculum specifically for people who are probably now in their twenties or even thirties, who've never gotten a GED. And can we provide that super-cheap—maybe even paid for by the state—that says, ‘Take these classes, we’ll connect you with some online exercises, or online crowdsourcing mentors, and we’ll see if you can [pass].’ You can take the GED, I think, once or twice a year, as long as, you know, you want to. So there’s a greater consequence that's good that may come out of this, if we get enough lessons in this.

Miguel is hardly a heartless plutocrat: he expresses a desire to bring about "a greater [socioeconomic] consequence that's good" through his product. He was also actively working to meet the needs of international students to attend American universities:

> I think there is a psychological as well as technological opportunity in China, because of their interest in learning English, and also to go schools in Western countries. In China, they have no interest in watching videos in Chinese. They want to watch the videos in English. They want it to become a natural language to them. A lot of kids in China who apply to the U.S. for college fail the TOEFL exam, because their English isn't good enough.
>
> I suspect that a lot of lessons will be listened to by kids who not only want the education, but want to listen to real teachers, real people. And that's why what we promote in our teaching environment is: I want to see you. I just don't want to see a PowerPoint screen and your voice behind it. They want to see your lips move. That's a really important piece to it on an international basis—they want to watch you say what you're saying.
>
> I've got Chinese consultants, and a possible partner in China I'm working with. I've approached three possible partners or consultants. [And] I hired an international accounting firm to help me also figure out the deal with all that.

The scope of Miguel's thinking was impressive—he was undeniably an intelligent, experienced businessman. But as the following section shows, his claim that his product would be a "win" for teachers and students was, at best, predicated upon a very narrow, market-oriented definition of a "win."

Teachers and Students as "Entrepreneurs of the Self"

The aforementioned public forum was a particularly revealing presentation, because it was essentially a sales pitch for Lessonr delivered to the labor pool Miguel hoped to cultivate: teachers intrigued by the concept of the flipped classroom. It was held in June, after the school year had concluded, and was publicized with a press release, an article in the major local newspaper, and a friendly interview on an afternoon news show by a local TV station. Although Miguel had estimated between fifty and one hundred teachers would attend, the actual attendance was about twenty-five. Glossy handouts, with taglines such as "Teaching for the Future," were distributed to all attendees.

The first part of Miguel's presentation, however, seemed more directed at potential investors than teachers, as it focused upon demonstrating the massive, largely untapped market for K-12 education. He spoke about the need to prepare students for colleges and universities, which were "moving to a much higher-tech environment:"

> Reimagining education—universities are rethinking this on a monumental basis. The cost of buildings, the cost of technology, the cost of support, is crushing universities. So the question is, why should I have a [class]room at all? Right?
>
> There are five major for-profit corporations—university corporations—in the country, and you can probably name one of them: University of Phoenix, right? There's Career Education Corp. There's a whole bunch of others. Most of them are billion dollar businesses. Now, they wouldn't exist, if the not-for-profit public education markets, you know, basically did everything that was necessary. So that's kind of an interesting space.

He also spoke about the need to prepare high school students to become productive workers: "Studies have found, you know, a good teacher can really economically impact students," he asserted. "They can make more money if they learn correctly. That's part of what we're here for today, is to look at how do we facilitate that."

He additionally sought to demonstrate that there were burgeoning international educational technology markets, presenting an array of statistics regarding global internet users, global 3G connectivity, and the global use of handheld devices such as iPhones and Android smart phones. "Does Nigeria have 3G?" he asked, pointing to one of his slides. "Absolutely. They may have a one-room class somewhere, but they've got 3G-capable technology in that room. Which means that we can stream video right to their classroom. Once you get to 3G, video streaming becomes a real possibility. It may be expensive there, but it becomes a possibility."

Miguel even attempted to position Lessonr as a more acceptable alternative to SparkNotes and other products aimed at students seeking to avoid doing required coursework:

> Miguel: We want to have a more efficient way for teachers and students to gain access to a system. Now, when I say a student, I say: I'm in school in Wyoming. I've got chemistry problems. I can't afford a fifty dollar an hour coach. How do I get to my specific problem tonight? Not tomorrow.
>
> Most of you are familiar with Sparknotes, right? You know Barnes & Noble sells them. They're, you know, sort of a summary of a book. You know why kids buy them? Why do kids buy Sparknotes?
>
> Audience member: So they don't have to read the book.
>
> M: Because they don't want to read the book, right? So they get a little fifteen page summary that they try not to plagiarize. You know how many Sparknotes Barnes & Noble sells a week, during school?
>
> Audience member: Tons.
>
> M: [A]crazy number. Sometimes millions. At $5.95 apiece. Wow, right? And most kids, at five bucks—I'll pay for it myself, even if my parents don't know about it. [Chuckles from audience.] Because I didn't read *War and Peace* last week, so I'm just gonna get the Sparknotes to it, right?
>
> Kids will do a lot of things to get to a certain outcome, right? And it's amazing, the volume of what comes about because of the internet today. We want to create a method that allows parents and students to take control of their educational needs.

Miguel begins by talking about improving education for "teachers and students," but by the end has shifted to "parents and students [taking] control of their educational needs"—which, in this instance, amounts to avoiding work assigned by teachers. It did not seem to occur to Miguel that teachers might not be interested in a product that facilitates such evasions. Nor did it seem to occur to him that they might not be interested in learning about the technological infrastructure of Nigeria. Such discrepancies, which were common, revealed that as compelling a salesman Miguel may have been with other businesspeople, he was not at this time particularly adept at communicating with the labor force he hoped to cultivate.

When Miguel spoke about the details of how Lessonr would work, his pitch to teachers was constructed around several economic and educational incentives. His product was free for teachers to use. Students in their classes, moreover, could be given an access code so that use of Lessonr to view their teachers' videos would be free for them as well. Teachers would have the ability to see which of their students had watched their videos, and how often. They would also be able to construct "lessonrs," or lesson plans that linked and grouped particular bundles of videos. Ownership and copyright liability—an unresolved and contentious issue during the partnership with Catholic Academy—was by the time of this public forum clarified: teachers would retain ownership and control over their videos, agreeing to grant Lessonr a license to play their video, which they could revoke at any time if they chose. But this also meant that teachers would be liable for any copyright infringements. "I like that better from a company perspective," Miguel admitted to me in an interview, "because if someone says 'This teacher's violating the copyright,' we'll say, 'Well, we'll take it off [Lessonr's website], but they guaranteed that they weren't [violating copyright in the license agreement], so you'll have to take it up with the teacher."

Miguel also claimed, in the public forum, that Lessonr would review every video that was posted for potential copyright violations—while also suggesting that teachers might be able to make additional money through educational product placement arrangements:

> Miguel: The way Lessonr works is if you posted a video, my team watches every video that goes up. And if we think you're violating copyright, we will tell you. We won't tell the world. We'll just tell you: 'We're not gonna make your video live, unless you fix this.'
>
> Audience member: So, as a teacher, you can *refer* to a chapter: 'Look at chapter—'

> M: Absolutely. You can show the cover of a book. I mean, every book publisher would love you if you show the cover of a book, saying, 'Go to page thirty-five—and if you don't have one, buy it on Amazon.' Right? They'd love you. They might even pay you to do that, you know? In movies, it's called product placement, right? You kind of pan the screen, and there's a Burger King on this side, you know, Starbucks coffee over here. Some popular teachers in our system may have publishing companies give them product placement dollars: Just pan your camera. 'Just watch that book that's right there. That's my reference book.' Who knows where this will go?

Even though teachers wished such content could be free for students, the promise of making more money for themselves was undoubtedly a major incentive for them. The grim economic situation of teachers was underscored at the conclusion of the forum, when Miguel asked if anyone had any final questions or comments, and a teacher stood up to announce that she was looking for work, and if anyone knew of any job opportunities to please let her know. Teachers seemed largely unconvinced by Miguel's pedagogical arguments, but were curious to know more about Lessonr's revenue sharing system.

The amount of money a teacher could earn from Lessonr was dependent upon several variables. The first was the number of unique views. Videos that did not attract any unique views were ineligible for revenue sharing. The decision to evaluate unique views, rather than total views, was so that teachers could not "game [the] system," a potential outcome that Miguel appeared to describe with some amount of disdain for his previous employees:

> What we do on a monthly basis is we take the people [whose videos] were played, and we rank them. You get a point for a unique play. So [if] my daughter Lexa plays your video five times that month, you only get a point for the unique play.
>
> The reason it's that way is so teachers and our students don't game our system—to talk to every high school student in the class and school, and have them all, you know, click on me five hundred times, and I'll be the top one, and we'll all, you know, have a party. Can't do that, okay. And the reason—you know, I worked for a public company. I've seen every way for every employee to game every bonus plan there ever was. I mean, it's just amazing what they will do for fifty bucks.

> Okay. They will violate the law for fifty bucks.

The second variable was student ratings: students had the ability, after watching a video, to give it a thumbs up ("yay") or a thumbs down ("nay"). Videos received an additional point for each "yay" rating earned. "Nay" ratings did not negate points earned for unique views, but did not result in any additional points.

Once these "points" were calculated, the money set aside for revenue sharing was to be distributed according to the share of total "points" each teacher had earned. A teacher earning 1,000 points in a pool of 30,000 points, in a month in which there is $20,000 to share, for example, would earn one-thirtieth of that amount ($666.67). The fewer teachers with whom to share the revenue, and the greater number of students subscribed to the service, the more a teacher could make. Miguel was able to take advantage of teachers' existing jobs, however, to rationalize a limit on the amount a teacher could earn in educational rather than financial terms:

> We have a limit, though. The maximum amount that we will pay an educator is $4,000 per month. And you [may] say, 'Ugh, why can't I make a hundred [thousand]?' Well, I don't want you to quit your job, okay. I want education. But I want to make it interesting enough, long-term, so you make enough that you know if it is worthwhile to do this.
>
> Think about it. Every video you make is for the world, not just for your class. We have a secure private system. That means nobody can download it. You have control of it. You decide you don't want to play anymore, you can, you know, take it all off, and you're out of it, okay. But for you to generate, let's say, a thousand, five hundred, two thousand dollars on your own on a website somewhere—you'll never get enough people to come to see you. I kind of look at this as an educational co-op you're joining forces with—possibly ten thousand other teachers—and that would be, you know, interesting for other people.

Miguel is able to impose this limit upon teachers because he knows they would rather have a little extra income than no additional income, and he also knows they could not possibly make the additional income he is promising them on their own. At the same time, four thousand dollars per month is certainly enough of a sum to be "interesting" to a

teacher. He is therefore able, even as he withholds money from teachers, to position himself as a champion of teachers, since he does not want teachers to quit their day jobs, yet he wants to provide them with an "educational co-op" that economically empowers them.

In a later interview with him, I asked him for more details regarding revenue sharing with teachers, about which he was circumspect:

> Well, we don't disclose the percentage, because it's relative to what our subscribers—for example, if it takes $50,000 to run the company per month, but I only have $60,000 in revenue, it's hard to share a lot. But if I have a million dollars in revenue and it only takes $50,000 to run the company, then I could share a lot of money with the teachers, okay. So one of the reasons we don't say a percentage is because as our subscriber base increases, the percentage for the teachers will increase significantly, and it could be up to 50% of the revenue, I think.
>
> Because remember, I'm not after this to just generate revenue. I've got that. This is how can we make it a win-win-win, and it won't be it if I keep most of the money and don't give it to teachers.

While he is correct to observe that the percentage of revenue shared with teachers must be variable, he could have communicated to teachers how exactly this would vary. Instead, however, he requires teachers to trust that he will in fact share a significant amount of revenue with them. Even if teachers do not get paid, Miguel argued at one point, participating in Lessonr is still a "win" for them, because they can still use their videos in their existing classes: "If you never get played, so what? You get a tool that really gives you a lot of value. If you get played a lot—hey, you know, maybe I'll take my kids to lunch."

Lessonr's economic model, in short, is one in which the work of teachers for their classes is commodified and packaged for a larger audience. "The cool thing," Miguel told the teachers, "is you do it for [your existing students], and then you're doing it for the rest of the world at the same time." But, of course, teachers must significantly *change* the

work they are doing for their existing students. He encourages them to "flip" their classrooms to gain maximum value from Lessonr. Although he promises "control" over what "content" teachers "deliver," they lose control over *how* this content is delivered. Due to copyright restrictions, teachers cannot even display the pages of textbooks in their videos. Miguel does intend to share some of this revenue with teachers, but does not reveal how this percentage will be determined. Teachers, meanwhile, are expected to compete with one another for unique views and "yay" ratings. It is difficult to think of another educational arrangement that could be more congruent with Foucault's famous claim that neoliberalism makes actors into "entrepreneurs of the self." It is a "win" only in the sense that a few teachers might become more economically empowered. But it comes at the cost of eschewing other pedagogies that might result in better outcomes for students, which are about more than simply "content delivery," yet cannot be so easily commodified.

Miguel and his staff argued that the pedagogy of the flipped classroom was, in fact, superior to more traditional pedagogical arrangements. He did this by presenting the flipped classroom as an antidote to well-known limitations of traditional pedagogical arrangements, such as the difficulty to minister to individual students. But he also exploited stereotypes about young people, drawing upon shared beliefs that young people were inscrutable yet almost magically tech-savvy. He was able to present himself as a champion of students as well, freeing them to "take control" of their own learning. While educators were more likely to emphasize that students "need structure," Miguel emphasized their independence and their ability to learn in their own ways. In this regard,

he was able to use against teachers their politically expedient construction of youths as helpless would-be learners, revealing the condescending character of this construction by contrasting it with what appeared to be his own more optimistic beliefs regarding the educational self-efficacy of students. But a closer analysis reveals that his construction of young people was no less condescending or expedient, and that these students were also to be made into "entrepreneurs of the self."

Miguel correctly identified students and their parents as the "customers" in his business model. He was, of course, attempting to convince teachers to "consume" his product as well. But Lessonr was following the example of Google, Facebook, and other technology companies that provide a free service to one audience in order to sell the data from this audience to another. In the case of Google or Facebook, this second audience is advertisers; with Lessonr, it was students. In Marxian terms, one might argue that this labor is exploitative, since the labor is not financially compensated, but it is not necessarily alienating, since many of these laborers derive non-economic uses and gratifications from their labor (Rey 2012; Terranova 2004).

Miguel attempted to walk a fine line in his presentations to teachers. He was, to some extent, suggesting that students should be more independent from their teachers and their schools in threatening ways, as the excerpt above regarding Sparknotes revealed. But he also attempted to present Lessonr as a "tool" that would improve outcomes in teachers' own classrooms, because it was more suited to the learning styles of tech-savvy students. His most candid comments on this topic were in an interview with me, when he

suggested his own personal learning style, unusual for his generation, had become normalized among today's youths:

> I [personally] just soak in a lot of technical information, and the faster it comes to me, the better. And to some degree, video can deliver a lot of information in a very short period of time. So there's a personal perspective here, that I think there's a lot of kids that are like that today. I may be—you know, I may have been ahead of the wave a little bit. But today's kids don't want to spend an hour or two trying to gain a little bit of knowledge. In five, ten minutes, they want—you know, they want you to pour it on. And then they'll try to figure out what to do with it. And it may not stick, but they know that they can go back to it, right?

Miguel characterizes traditional classroom arrangements as inefficient: "[spending] an hour or two trying to gain a little bit of knowledge." In this regard, he is similar to Rita, hoping to use educational technologies to eliminate boring, inefficient pedagogies. But it is not surprising that he did not vocalize the implication of this characterization—that an hour or two in a traditional classroom contains the learning equivalent of five or ten minutes of videographic instruction—to teachers, although many of them certainly recognized it. While Rita and many other educators might agree that traditional pedagogies could be made more efficient, the suggestion that over 90 percent of class time is not worthwhile was deeply insulting to them.

Miguel instead attempted to emphasize to teachers how technologically advanced their students were in comparison to them:

> A lot of you are on desktop computers and portables, right? Moving to, you know, complete smart devices: tablets, phones, whatever they may be. My kids, 20 and 18 [years old], really don't know what records are anymore, and I suspect that their kids will not know what a CD is whatsoever. All right. My son doesn't do e-mail. He's 20, he's a musician, he's online—doesn't do e-mail. If you're not IM[ing], you know, directly texting him, or he's not getting his messaging through Facebook—don't bother, all right. We consider e-mails still a business function, but for a lot of them, that's just not the way it goes.

He also attempted to convince teachers of the almost magical appeal of technologies to young people, presenting them as an educational panacea:

> You know, we're in a class [right now], raising our hands. These kids who are here today—you know, you've probably seen like in a restaurant. Someone says, 'Ugh, my kid's acting up—I'm gonna give him my iPhone or my iPad just to entertain them.' Well, that methodology of entertaining them is teaching them how to interact with that technology.
>
> I've got a friend of mine who runs a school for autistic kids. And it's amazing when they pull out the iPads in that school. For a room of kids that is never quiet—pull out the iPads, and there is silence. Because now they're focused on this one device, where nothing else worked before. Which means, you know, if we can reach them, we can reach a lot of other people.

He later described how he envisioned students would use Lessonr, emphasizing how his product is tailored to accommodate multiple derogatory, stereotypical behaviors of young people: waiting until the last minute to complete schoolwork, not wanting to talk to their parents, and staying up late at night:

> And I can tell you that I will see—[with] the trends that are happening—the kids will probably hardly ever watch this on the computer. Most of them will be listening to your lecture on the way to school in the car [chuckles from audience] as their parents are driving them to school. Because you know, if [a video is] only five minutes, and I've got a thirty minute drive, I can get six classes in before school even starts. I was down at [a different college preparatory school] and they have a map there of how far kids go to [get to] that high school—I mean, some people are over an hour away. Shoot, I can get all my lectures done every day while my parents are—you know, I don't have to talk to my parents, I can listen to the lectures. They'll be fresh, you know?
>
> I know—my son is 20. He would only probably start listening to them at 1 AM in the morning. I mean, that's just, you know—he is turned on between eleven and three in the morning. The rest of the time, you know, [his] mind's all jumbled.

In these excerpts, Miguel is appealing to some commonly held beliefs about young people, while simultaneously positioning his product as a tool that is better capable of appealing to, reaching, and accommodating the strange practices of "these kids." Educators did not—and could not—resist this characterization on the grounds that his construction of youth relies upon exaggerated, condescending stereotypes, since they themselves subscribed to many of these same stereotypes. Because their socioeconomic position compelled them to construct young people as frustratingly difficult to manage as well, they could therefore only dispute the superiority of Miguel's product in ways that left them vulnerable to the accusations that they did not understand youths, were

"resistant to change," or were selfishly interested in retaining control of the educational process to the detriment of their students. In this way, Miguel was, in essence, able to leverage the stereotypes about youths that educators felt compelled to embrace against them.

Miguel also sought to leverage another common condition in contemporary K-12 education: the increased involvement of parents in supplementing the work of teachers. The flipped classroom, Miguel claimed, would "absolve" parents from contributing unpaid time and effort to their youths' education, while improving the quality of that education (and their opinion of their youths' teachers) at the same time:

> The other part is parents are absolved. [...] You know, think about it—if you told parents, 'Your kids are gonna spend seven hours a day doing homework,' they'd say, 'I'll kiss you.' That's the case. They're doing seven hours of homework every day at that school. But they're just doing it in school, and are only spending an hour outside of school—which [they] would normally would do anyway, listening in iTunes or whatever.

Although Miguel, at the time of data collection, was exclusively focused upon building up his video library by increasing teacher participation, rather than growing a subscription base of students and parents, such statements hinted at how he would market his product to these potential customers. With parents, as with educators, he could appeal to stereotypes of young people, while also appealing to their desire not to have to help their youths with their homework, and their desire for teachers to spend more quality time with their youth. "Do you want me to spend forty minutes dumping info [in class]," Lesonr employee Andrew asked rhetorically during a professional development session with Catholic Academy teachers, "or do you want me to spend forty minutes interacting with your child?" With youths, meanwhile, Lessonr could present itself as a way to get

parents off their backs, to minimize out-of-school time spent on schoolwork, and to learn in their own ways, at their own pace.

Miguel, in short, insisted that Lessonr would give teachers, parents, and students "control" over educational processes: "a win-win-win." Yet it was clear that not all of these groups could increase their control simultaneously. Control gained by one group was often dependent upon a loss of control by another group. By compelling teachers to condense classwork into five minute videos, changing and constraining their pedagogy to make it more commodifiable, teachers and schools did not seem to "win" in this arrangement. The ultimate aim of Lessonr, rather, was to separate pedagogy from physically grounded people and places, commodify it, and provide the user-interface for this new educational arrangement. "Why have a class[room] at all?" Miguel had wondered aloud. Lessonr attempted to realize this vision.

From this perspective, one may wonder how Miguel was ever able to partner with Catholic Academy at all, when his vision of education was so antithetical to that espoused by its educators. One reason, of course, was financial. Miguel frequently touted his for-profit model as an improvement over nonprofit organizations like Khan Academy, since this permitted him to "share revenue with teachers and schools, which they're really hurting for." But as the section below will show, another reason was ideological. Because educators were committed to an idea of pedagogy as a diverse "toolkit," and educational technologies as "both good and bad," they had difficulty rejecting the flipped classroom model outright. Rita, especially, believed that there could be some use to the flipped classroom method, if it was applied properly. This openness to trying new methods of

pedagogy for the sake of improving learning outcomes meant that Miguel was at the very least given a hearing, rather than being recognized at the outset as a threat to the interests of school-based educators. In the case study of Lessonr's affiliation with Catholic Academy, this volatile mix of the conflicting interests of teachers, administrators, educational technology professionals, and entrepreneurs threatened to boil over into organized resistance by teachers.

Lessonr at Catholic Academy: "He Was Pretty Much Booed Out of There"

Lessonr seemed to be caught off guard by how quickly and thoroughly it was welcomed into Catholic Academy by the school's administrators. Miguel had only very recently designed the software for Lessonr and hired a programmer to begin to write the code for the application. He had then begun, in a very preliminary way, to reach out to schools. "At Catholic Academy, it wasn't intended I was going to go to that school," he told me. "It was, 'Let's just talk about what we're doing and if we can be helpful.' If not, no big deal, right?"

This timeline perhaps helps to explain why Miguel's presentational style was so jarring to Catholic Academy teachers. Miguel was clearly an intelligent man, but he did not reveal to me any previous experience in K-12 education, and his product was clearly in its preliminary stages of development. For these reasons, I suspect that many of his statements that struck educators as clumsy, calloused, and ill-advised were mostly the result of his lack of familiarity with the K-12 educational workforce at this early stage—and that he himself, with the benefit of more experience, would look back upon many of these missteps with some amount of chagrin.

By multiple accounts, Miguel first contacted Belinda, the principal, through a mutual acquaintance in their professional networks. According to Miguel, "Belinda sort of latched onto [Lessonr]. Belinda saw—I think that she saw a market, [that it could] build marketability for the school." This led to a presentation by Miguel to the school's board of directors, which was received enthusiastically. Speaking to me at the height of tensions between the school and Lessonr, however, Belinda presented herself not as someone enthusiastic about the arrangement, but as someone simply following orders. "My employer is the board," she insisted, claiming that her job was to "ensure employees of the school execute policies." Contrary to the common misunderstanding that she could do as she pleased, she claimed she didn't have "a choice" in the matter. The image she projected to her staff, however, was one of a vociferous supporter of the initiative, an image which only changed once relations had deteriorated completely.

Miguel was invited to present to Catholic Academy educators at a faculty meeting in late February. This was the first time teachers had met Miguel. They had not been informed of proposed partnership beforehand, nor, according to those with whom I spoke, were important administrators such as Belinda present at the meeting. Every educator with whom I spoke agreed that it had not been a positive experience. Comments ranged from diplomatic statements of "getting off on the wrong foot," to educators being "infuriated." The most offensive comments Miguel made, according to the teachers, were with respect to Lessonr as a means of financial enrichment for the teachers and the school—saying, for instance, that Lessonr was going to "help [teachers] pay off their mortgage." With the school unable to pay teachers on time, the conclusion that the school

had been "seduced by a smooth-talking, snake oil tech guy" was prevalent, as one teacher described at a later date:

> They pretty much sat [us] down and said, 'Hey guys, we're gonna do this whether you like it or not. And that's just the way it is. And here's what you're gonna do, and it's gonna cost you a whole lot of extra time. You're not gonna get paid any more for it, and you just need to do it if you want to keep your job.' So obviously there was a whole lot of resistance just to that in and of itself.

Several felt that Miguel himself was "arrogant" and "holier-than-thou," and that the administration was treating them "like children" by remaining tight-lipped about details and expectations. A "deal" between the school and Lessonr was being discussed, but no one knew anything about it. Rumors flew that Miguel had been sued in the past for illegal business practices. School administrators largely ducked behind Rita while educators clamored for more information, according to one teacher:

> There hasn't been a time to discuss. There hasn't been a time to say or answer questions that the faculty has. Rita gets those questions. Rita gets that frustration, when all she's trying to do is facilitate something that she's been told to do—it's not her fault, it's not her idea, you know? And I think she's done a fantastic job. And I think us adults realizing that it's not her—I hope besides me, but I know I've talked to other people as well—give her that support of 'We know it's not you, we know that you're given this information, and that's all you can tell us.'

In their opposition to the Lessonr initiative, Catholic Academy teachers cited many of the complaints described in Chapter 4, especially their lack of time and the lack of relevance to their current classes. They also stressed that pedagogy, in their view, involves much more than the content delivery to which the "flipped classroom" seemed to reduce teaching. As a group, however, they were careful to insist that their disapproval stemmed from "the way it was handled" by administration and their distrust of Lessonr, rather than a general antipathy toward technologies or new pedagogical methods. They were very concerned about ownership of their content and copyright liability, which, since the

product was still in its early stages, had not yet been determined. The prescriptive use of educational technologies and the loss of teacher autonomy also rankled teachers:

> Teacher: They haven't really had any policies [in the past]. They've never had a 'this is what you need to use, this is how you much you need to use it,' per se. [They] give us a laptop, they encourage diversity, they encourage being able to use it, and to help students use it, and to let them—you know, finding their learning style, finding the best way that they learn. If that's the technology route, then that's the route you go.
>
> Me: Okay, so would you say that's one of the unique things about the flipped classroom thing, is that it's more—
>
> Teacher: It's more, 'this is what you have to do?' Yeah. Yeah. It's more of a 'this is how much you need to do.' Yeah, that's what it is. Yeah.

Despite all of these concerns and complaints, Rita at first hoped to be able to turn this initiative into one that was productive for teachers, as she told me after the first day of professional development sessions with Lessonr:

> What I've been trying to do—I'm starting to see more and more of my role as being a negotiator between these two sides that seem to be forming, in that making the teachers—continuing to have them forward with the project. Because I do believe in the use of videos, and believe there can be a purpose for every teacher, and so I don't want them just to back away from it because, you know, they don't feel comfortable with Lessonr. I want them to look at it kind of outside of Lessonr.
>
> And then also trying to talk with administration, as well as deal a little bit with Lessonr in our school—as far as, you know, 'This is kind of what the teachers are doing.' Is that—I hate this expression—'good enough,' for what administration and Lessonr is looking for? Because you know, again, I don't think the project is clearly defined at this point, and what Catholic Academy's connection with Lessonr really is.

The hostility educators felt toward Miguel was, in many ways, the result of the clash between his commodity-oriented ideology and their own public good-oriented ideology. There were times, too, when I personally believed that Miguel was acting in a condescending or dismissive manner toward Catholic Academy teachers. However, it is possible that this antipathy was partly attributable to racial prejudices. In an elite school located in a very conservative Congressional district, with an almost entirely white faculty and student population, the claims of "arrogance" reminded me of similar racially

motivated accusations leveled by political conservatives at the time against President Obama. There was one instance, in particular, when a white educator invoked the racially coded word "uppity" to describe Miguel:

> My personal perspective is that the gentleman that runs [Lessonr], Miguel, is a slick sales guy. You know, I could see him coming a mile away. It was the same smile, the same uppity attitude. I don't mean "uppity" as in snobbish...well, that too. But cheerful, and 'Let's see how we're gonna be making a million bucks in two years,' and all this kind of stuff. And once you've seen one of those, you've seen them all, I guess.

This educator seemed to recognize that this word was revealing more than intended, but then committed to it anyway. It is doubtful that Miguel would have been welcomed with open arms had he been white. But for some, his ethnicity may have contributed to their animosity.

Throughout March and April, Rita—and sometimes Miguel and his Lessonr staff—continued to work with teachers, familiarizing them with the process of making instructional videos. Rita attempted to minimize contact between Miguel and the teachers, knowing that the teachers did not like him. She also attempted to align the initiative with her vision of how technologies should be used, creating time, for example, for teachers to meet with other teachers within their subject area to "really discuss how they thought videos would support their subject matter, their teaching style, the curriculum, and come up with ideas as to where it would fit."

During this time, Rita felt she was doing a good job of "putting out fires:" diffusing teacher frustrations and helping them to figure out how they could fruitfully employ instructional videos in their classes. Teachers, however, insisted to me that their anger and resentment had not diminished. Important details still had not been revealed, and they were still skeptical of the pedagogical value of making videos. While Rita

claimed the majority of professional development sessions during this time had been productive, she also revealed that a male teacher had, during one session, directed a verbal outburst toward her, which she characterized as "dark" and "scary." "The conversation really went astray," she confessed, eyes looking at the floor, voice quieter than usual. "And so...he got mad. He was yelling, he was ranting, and that."

There was, during this time, a transition in the expression of resistance among male and female teachers. Female teachers, who had initially been more outspoken, became less so, with some even averring that they were going out of their way to "stay away from the drama." Nicolette, who had characterized the initiative as "abuse" and "harassment" during my first observation in March, still spoke in extremely negative terms to me about administrative actions and Lessonr when I interviewed her again in May, but had withdrawn from expressing this displeasure publicly:

> By this time of year, I just want to stay in my room. Because I know I'm coming back. This is where I want to be. And I don't want to be all—I don't want it to be dramatical, you know. I just want to stay away from the drama, and the 'he said, she said,' and 'we don't want to do this.' Well then, in my opinion, go someplace else and work. But if you're gonna be here, let's see how we can make the best of it.

Nicolette's assertions that resistant teachers should "go someplace else and work" was typical of teachers who had previous experience in the business world. Although these teachers were no less upset about the initiative than teachers without business experience, they were far more likely to resolve their displeasure by framing the dilemma in terms of employment and "choice." By bracketing their emotional, ideological, and practical grievances to focus on the outcome of their "choice" regarding whether to stay or leave, they regained some emotional solace, even as other teachers became even more upset over time.

By contrast, male teachers, who had at first tended to observe stoically or fume silently, became more outspoken over time. In addition to the male teacher who had exploded during one of Rita's professional development sessions, two male teachers led the opposition to teacher liability for copyright infringement. They attempted to convince the administration to permit teachers to sign ownership and liability for their videos over to the school, and even went so far as to consult an attorney to better understand the legal implications of their position. Rita denied that there was a perfect gender correlation between resistance styles over time, but revealingly used gendered language to distinguish between the "divas" who were outspokenly resistant, and the "soldiers" who, though they were not pleased with the situation, did what was required of them with minimal complaints.

In short, as winter turned to spring, Catholic Academy teachers stewed in a sour atmosphere of apprehension and dissatisfaction, and Rita and Gretel worked fervently to diffuse the tension. Meanwhile, Miguel benefitted from the wholehearted support of upper administrators, and the tentative support of Rita and Gretel. But in April, this support began to erode. One factor was the differing marketing objectives of Lessonr and the school: Lessonr sought to characterize their product as a transformative agent at a previously "boring," lecture-based school, while Catholic Academy wanted to portray Lessonr's involvement as an enhancement of an already robust and innovative pedagogical philosophy. "The thing I struggle with, and I can't figure out a way to say this politely," Rita admitted to me, "is we can't sell this as 'We've been teaching your

kids in boring ways.' [Lessonr is] trying to sell a product, but we've already sold parents and students on our model."

In a later interview, Rita related an anecdote in which Miguel and Gretel had met with a public relations consultant to promote the partnership, which had further aggravated this tension:

> [Miguel] met with Belinda and a PR firm [because there was] supposed to some sort of press release—you know, about the partnership.
>
> It turns out that Belinda was in a meeting, and it was running long. So she sent Gretel instead to kind of fill in the gaps. And as Gretel came in, the PR guy was asking about the philosophy of the school, and how this [initiative] fit with all that. And Miguel was just giving him total bullshit about what he thought it was, you know. He was going right back to '[It's a] lecture-based school, a very traditional-type school.'
>
> And so Gretel kind of filled in—you know, talking about the [pedagogical] model that we're trying to follow, and how Lessonr fits into that model, and that. And she really felt that Miguel was just blowing her off—you know, he wasn't even listening. I mean, he was correcting her to the PR guy about the school that she's the director of curriculum for!

A second source of conflict between Catholic Academy's administration and Lessonr occurred as the school began to recommend Lessonr to other area schools, and Miguel was "shown the door" or "pretty much booed out" of them. Rita recounted one incident in particular in which Catholic Academy's advocacy had been especially embarrassing to the school:

> Sister Margaret [the president of St. Ignatius, another local religious high school] came out to Catholic Academy [and] specifically asked, 'How is he with teachers?' You know, in selling his concept with teachers. And Belinda jumped in right away, and said, you know: 'He's a salesman, he can sell anything to anybody.' [The vice-principal] echoed the same thing. I felt terrible, because I didn't say a word. You know, I didn't agree, I didn't disagree—I just kept my mouth shut.
>
> It's my understanding that when he went out there, St. Ignatius's teachers pretty much were throwing tomatoes at him and everything else in his presentation. So he's not 'in' at St. Ignatius. He was pretty much booed out of there. And so this has upset Belinda also. His arrogant ways are kind of coming back and they're biting her, because she's making recommendations.

In the meantime, Rita was becoming increasingly disenchanted with the administration and their methods, aligning herself with the teachers, and even going so far as to "avoid" Belinda:

> Both Gretel and I are trying to talk to [the vice-principal]. I've just avoided Belinda on it. I've had one very heated discussion with her on it, and, you know, she was just like: 'Miguel is here,' and 'Just get used to it,' and 'You just want to control.' You know, she has this view that tech people only want control, they want to run the whole school. That's just the view she has—it's just kind of this overreaction that she has.
>
> So I deal—I'm dealing mostly with [the vice-principal] trying to negotiate: 'Okay,' you know, 'What are your expectations? And then how can I make this work for the teachers?' So I'm an advocate for the teachers.

The teachers, meanwhile, due to the school's financial troubles and the imposition of the partnership with Lessonr, increasingly viewed the school as a poor workplace, a sinking ship. "Every single person that I've run into and talked to, minus two, are pursuing other [employment] options," one teacher told me. There was speculation that over half of the faculty might not return for the following school year. Many teachers whom I interviewed insisted that they liked the school and its Catholic and pedagogical philosophies, but had a very negative opinion of the school's administration. "No one trusts administration," one told me. "They're really being seen as 'the Other.' 'They.' So when we have these meetings, it's like, 'Well, have 'they' told you this?' It's constantly the 'they.' So you really see the divide that has happened."

This cauldron of professional antipathies boiled over and reached its peak in early May, when three events occurred in quick succession. First, teachers were formally informed via e-mail that the administration was requiring them to make 20-25 videos and upload them to Lessonr before they would be permitted to "check out" for the summer. Moreover, even teachers who would not be returning for the following school year would

be required to make these 20-25 videos, on the grounds that they were still "under contract" until they had "checked out" at the end of the school year. This outraged even the more supportive educators of the initiative, as well as Rita, who was upset both at the hypocrisy of treating teachers' contracts as sacrosanct as well as the inflammation of teacher resentments she had worked so hard to calm down:

> [The school] has already broken the contracts, okay. Because the school is behind in paychecks. The school's supposed to be paying people once a month. And since December, the paychecks have been coming in two installments, and one installment is two to three weeks late.
>
> So here you have people who are working on—as Don [a math teacher] says, a handshake, okay—and you're pulling this crap that says, you know, 'You're under contract.' It's really a bad move from my viewpoint, on their end.

Another teacher, who had only minor complaints about the initiative when I initially spoke with her, was far more upset when I spoke with her again:

> [There's a] teacher who's not even going to be here next year, and she's expected to do all these videos that she's not even going to use. And I'm on fire about that, let me tell you. Because I think that's ridiculous, that she's supposed to stay here two weeks after school is out, and make videos that aren't even going to be beneficial for her.
>
> That's when you say this is obviously a moneymaking thing, if they're wanting her to do something that isn't beneficial to her or anyone else. Because they even said [to her], 'Well, we know that no one else is going to use your videos, because they're going to want to make their own.' You know? And so, when that kind of stuff happens, that's what brings the negativity, or you know, keeps you from being positive about it.

"Just make the videos!" Rita alleged that Belinda had exclaimed during a meeting. "Who cares if no one watches them?" Belinda wanted the teachers to contribute some of their time and skills to benefit the financial situation of the school. But it was precisely the explicit disrespect for teachers' time, and explicit disregard for work that did not contribute to teachers' goals in the classroom, which prompted teachers to "care" very much about a demand to invest their time into these videos. Miguel and the school, one teacher asserted, only cared about "making a buck off my blood, sweat, and tears."

The school's vice-principal had a more sympathetic perspective than Belinda's—but also insisted upon the right of administrators to request these videos, invoking the tropes of "resistance to change" and the "best interests" of the students:

> It's been a tough year. People are tired. And we're asking the faculty to do one more thing before they leave, and that is to complete a semester's worth of work for one of their classes, on what their lectures would be, and make those—you know, provide those at this time—to make them, and to make them available.
>
> And there has been some pushback. I think, you know, any new idea—that's gonna be the case, you know, no matter what you do. But I really do feel like [this initiative] is something very viable, very possible, very helpful, very good for the students. And really, my philosophy is, if it helps the student, then let's do it. You know, as long as it's within reason and doable under the circumstances of whatever the educational institution is.

Compelling teachers who were not returning to make videos that would not be used, of course, did not "help the student" at all. Nor could this resistance simply be characterized as a knee-jerk "resistance to change." The vice-principal was either consciously invoking convenient narratives in order to justify what was primarily a financial decision, or was so out of touch with his teachers that he did not understand the symbolic magnitude of this administrative demand.

Meanwhile, Rita had placed Miguel in contact with Nancy, a professional colleague of Rita's and Gretel's at Classroom Innovators, who also happened to be a parent to two Catholic Academy students. Since Lessonr did not provide any professional development services to help teachers, Nancy, a salesperson, wanted to meet Miguel to explore whether or not there was an opportunity for Classroom Innovators to partner with Lessonr. The two met for coffee, and Miguel "kind of said a lot of stuff," as Rita described to me (and Nancy herself later corroborated) the day after this lunch meeting:

> His comment was that Catholic Academy has mediocre teachers, and it's because Belinda can't afford to hire decent teachers. He would put all of our teachers—he would say their tech skills [on a scale of 1 to 5] are a 1, 2, or 3, [and] no one is a 5. So, you know, he has a very low opinion of—

> but I think he has a low opinion of anyone who's not him. I've yet to see him really compliment anyone except himself. That's the kind of guy he is, you know?
>
> Not only did he badmouth the teachers, he also talked negatively about Belinda's leadership skills—that he was telling her how she could get out of financial woes quickly, which was just raising the tuition and getting all the 'deadbeats' out. You know, almost half of our students are on some kind of financial aid. He would get rid of those students.
>
> And then he also—I don't really know what he said about Gretel, but [Nancy] said that he did not speak highly of Belinda and Gretel, and she gave me the example of Belinda. So, I mean, he's just a jerk! I mean, that's—I mean, he's very full of himself. He spoke poorly of everybody except me. And I think that's only because I introduced him to Nancy, and he would worry that Nancy would get that back to me.

Nancy told Rita, who told Gretel. All three Classroom Innovators employees affiliated with Catholic Academy were incensed at Miguel's derogatory comments about the school. Nancy volunteered to speak to Belinda directly, which she did the following day. "There had already been another blowup [due to the St. Ignatius incident]," Rita said. "So everything Nancy said, Belinda believed." This was the final straw for Belinda. Miguel had already been scheduled to meet with her later that day, setting the stage for a heated confrontation in which Belinda, previously Miguel's biggest supporter, felt compelled to defend the integrity of the school:

> So [Belinda] confronted Miguel with some things—like you know, the teachers are mediocre, and Belinda can't afford better teachers. You know, he's been giving her financial advice. He denied it, and [it's] my understanding that what Belinda said to him—which, if she did, this is a very wise approach—is she said, 'Well, if you didn't say it, that's what was heard. And you have to consider what you did say, and how did it get twisted to be this.' Basically saying, 'Either way, you have a problem.'
>
> So you know, when I talked to Belinda yesterday, she said that he was angry when he left, but that she thought he was being reflective about what he had said.

This confrontation happened on a Wednesday. On Friday, Miguel was scheduled to participate in more professional development workshops for teachers. But yet another complicating event arose. On Thursday, Gretel learned that several teachers—unaware that the administration was angry with Miguel, and fuming over the recent revelation that

they would have to create so many videos—were planning an act of organized resistance at the Friday workshops. The plan for the workshops had been for Miguel to show the teachers how to create a Lessonr account, and for them to upload the videos they had already created to his site. Multiple teachers, however, were planning to refuse, en masse, to either create an account or upload their videos.

But the recent conflagration between Miguel and the school's administration prompted a change of plans. Miguel would still show teachers how to upload videos to Lessonr, but teachers would not be required to do it at that time. Rita hoped that this would avert the "strike" that was to occur during these sessions. Nevertheless, speaking to her on Thursday night, she was nearly beside herself with trepidation at what Miguel might say, or what teachers might do. "I feel like I've been putting out a fire and trying to calm some people down," she said, her voice shaking. "And so where I've been thankful that [Miguel] hasn't been around, he's coming tomorrow, and I'm scared to death, as to what he's going to do or say. He doesn't feel obligated to the teachers. He does not value the teachers."

Rita was also angry that the teachers, for whom she had been advocating, did not realize that an act of organized resistance during these workshops for which she was responsible would ultimately be damaging to her, rather than the administrators who were the real target of their ire. She distanced herself for the first time, in this interview, from the teachers, feeling that they were now unfairly including her among those with whom they were angry. "The stories are really kind of crazy right now," she said, rolling her

eyes and shaking her head. “There’s this big conspiracy theory—there’s this idea that we know stuff that we’re just not saying [to teachers].”

Ultimately, the day passed without any major incidents. Rita intercepted the most adamantly resistant teachers before the sessions began, informing them that they would not be required to upload their videos. Lessonr’s website also encountered technical problems that would have prevented teachers from uploading their videos, even if they had wanted to. Miguel left after the first two sessions of the day, instead of staying for all six sessions. “The sessions probably went better than I thought they would,” Rita said afterward, “because they were pretty much defused right at the beginning.” She understood, however, that this had only temporarily defused deep animosities, which had the potential to explode into organized resistance in the future.

The events of this week, unsurprisingly, cast doubt upon whether the partnership between Catholic Academy and Lessonr would go forward. Following these events, Rita claimed that Miguel largely “disappeared” from Catholic Academy. It was only in later interviews with Catholic Academy’s director of finance and Miguel himself that I was able to learn some of the actual circumstances of the proposed partnership between Lessonr and Catholic Academy. The school’s director of finance, speaking to me in June, after the school year had ended, presented the proposed agreement as something that was still on the table, but currently dormant: “I know [Miguel] was having difficulty or delay in getting everything up and running from his perspective, and I know that’s caused some delay,” he told me. “But I’ve not seen any written agreement, though it’s my understanding the school does have an agreement with Lessonr. Whether that agreement

has been signed, notarized, dotted, I don't know. At this point they're keeping it pretty high-level."

Miguel, however, insisted that the agreement was unconsummated due to Catholic Academy's inability to adhere to the proposed terms, though he was vague in his description of the situation. "The arrangement was an incentive for Catholic Academy to provide a certain amount of videos over time," he said, since Lessonr needed teachers to add videos to its library before it could attract student subscriptions. "But Belinda may not be able to push it along that fast. It was worked on, and then other issues came up—you know, more pressing things came up, that they had to work on other stuff. There could be [an agreement], but that's yet to be finalized."

Miguel did not reference the derogatory statements of which he had been accused by Catholic Academy educators in interviews with me. He instead characterized the impediments he had encountered at Catholic Academy and other schools as the result of poor timing, rather than a rejection of his product. One school, he claimed, was interested in using Lessonr, but had just hired a new principal for the following school year, and so was not receptive to other major changes at that time. Another was in the process of planning to give each student an iPad, and wanted to wait until this initiative had been implemented before making a decision regarding Lessonr. But Miguel was quick to note that capturing the business of an entire school had never been his objective. He was, instead, seeking teachers willing to embrace flipped classroom model of pedagogy, and looking confidently toward the future:

> The only reason to approach a school is really to get feedback from the greater group, not [necessarily about] participating with us, because it's really a teacher-driven activity. Some

> principals in [this metropolitan area] were very interested in what we were doing. But that's probably it—half a dozen schools [here] is probably the extent to the time I will spend looking at this in schools.
>
> It's still unknown to whether, how long, and what Catholic Academy will do with this. I mean, that's up to them. They may end up producing very few videos or a lot of videos. I have no idea. But there's six thousand [flipped classroom] faculty that I have direct access to, that once I turn this on—you know, they may upload six thousand videos overnight.

Conclusion: Winning the Battle, Losing the War?

At Catholic Academy, Gretel took the lead in negotiating with upper administrators an end-of-year arrangement that was more satisfactory to teachers, while also permitting the administration to save face. Although teachers would still be required to create twenty videos before signing out for the summer—including those who were not returning for the following school year—teachers would not be required to upload any of these videos to Lessonr, and some of the most resistant teachers were given other tasks to complete in place of the required videos. Additionally, several planned faculty meetings following the end of classes were cancelled in order to give teachers more time to complete the task of creating the videos.

Subsequent interviews with Catholic Academy educators several months into the following school year revealed that neither administrative advocacy of using instructional videos nor the planned partnership with Lessonr had survived the summer. Multiple teachers claimed they had not "heard a word" about Lessonr since the start of the new school year. Although some claimed they were "glad," in retrospect, that they had been compelled to make the videos, and were occasionally using them in their classes, others reported that they had neither used a single video in any of their classes, nor had experienced any pressure to do so.

It is clear that there were many unique circumstances at Catholic Academy that are not currently to be found at many other schools However, such idiosyncratic case studies can be most valuable. The financial burden so acutely felt at Catholic Academy, which contributed to the appeal of working with Lessonr, is hardly unique to this particular school. The business model and strategies of Lessonr, unsuccessful in this particular instance, are nevertheless likely to be replicated by other entrepreneurs. The socioeconomic interests, pressures, and stakes that fueled these unusually acrimonious work relations are common to many school settings. Furthermore, as Miguel himself noted, colleges and universities have increasingly been using technologies in the ways he was attempting, to reconfigure teaching and learning arrangements. While this has not yet occurred to the same extent in K-12 education, it is not surprising that entrepreneurs such as Miguel would look to K-12 schools as an available market. In this sense, the conflagrations between teachers, administrators, educational technology professionals, and entrepreneurs that ensued following Lessonr's entrance into Catholic Academy may be a harbinger of more frequent, intense struggles such as these to come.

The outcome at Catholic Academy was, in the end, one favorable to its teachers. In this regard, it may be seen as an encouraging indication of how other such struggles may transpire. While the resistance was in part fueled by Miguel's inability to successfully sell his product to teachers, this inability was as much a consequence of the fundamental ideological disparity between those who view education as a commodity and those who view education as a public good as it was a consequence of his poor salesmanship. Teachers, administrators, and educational technology professionals such as

Rita, in the end, do have a common interest in resisting the commodification of education and preserving the physically bounded space of the school. This common interest, and their collective sense of pride in their own institution, ultimately led to the collapse of the partnership.

But it is worth observing that the collapse of the partnership was partially due to some timely and fortunate circumstances. Miguel's derogatory comments about the school to Nancy were hardly inevitable. It is unlikely that he would make the same mistake again, or that other entrepreneurs would make such a mistake in the first place. Although relations between the school and Lessonr were already strained by that point, the contract between these two parties was still on a trajectory to eventually be ratified. Gretel, in particular, told me that she did not believe she would have been able to negotiate the mutually agreeable end-of-year arrangement that was ultimately adopted, if it had not been discovered that Miguel was saying negative things about the school. It is also worth considering how the outcome might have been different if the teacher "strike" had occurred, especially if it had occurred before Miguel's derogatory comments about the school had been known. Administrators might have felt compelled to punish these resistant teachers with even more strenuous demands, or to push through with the deal in spite of their reservations. Ultimately, it is undeniable that the school's administration had a strong financial incentive to consummate this partnership, and it was only extreme circumstances which compelled them to back away.

At Public High, an arrangement with Lessonr would have been less feasible due to the lack of technological support at the school and in the homes of its students. Yet in

my time at that school, a few teachers spoke of colleagues who were experimenting with the "flipped classroom" pedagogical model. Miguel surely would have welcomed their business, just as these teachers likely would have welcomed the opportunity to make additional money while flipping their classrooms. If Miguel had chosen to pursue additional arrangements with schools, moreover, he might have found a receptive audience in this impoverished district. His is a product which, if it is well designed and marketed, is likely to be appealing to many teachers and many schools.

It is also important to note the conspicuous absence of students in these debates and struggles. With the exception of a few students who had heard rumors of the possibility of flipped classrooms becoming more prevalent at the school, Catholic Academy students were largely unaware that these intense struggles over how to use technologies in their classrooms were transpiring. They were present in these meetings and professional development sessions not as equal participants with their own stake in the pedagogical process, but instead, to a large extent, as "tools:" an imagined audience, constructed in particular ways by particular actors to suit their particular visions of what education should be. It is for this reason that I will turn in the following chapter to the actual experiences of students themselves with educational technologies.

CHAPTER SIX: "SO HARD TO FOLLOW:" STUDENTS AND EDUCATIONAL TECHNOLOGIES

> There are so many rules at [Catholic Academy] that it's so hard to follow everything, even if you don't really mean to. So I think with technology—because there are so many rules, and there are so many things that I think are almost pointless—like, you're still doing your work, you're still getting good grades, and you're still on these [forbidden] sites. If anything, that teaches the student how to multitask and how to spend their time efficiently. Because if their grades start to fail, then they'll start to realize: yeah, I need to spend less time on Twitter. So I think that's just really up to the student—it's just kind of like teaching them the hard way what they need to be doing with their time. [Lori, 12th grader]

The administrators, teachers, technological specialists, and entrepreneurs interviewed for this study repeatedly aligned their beliefs about how the work of education should proceed with what they defined to be the "best interests" of students. There is little doubt that these educational workers do in fact care about their students, and are very much committed to the realization of optimal academic outcomes. I have argued, however, that the prevailing discourse which singularly focuses upon the "best interests" of students obscures educators' concurrent interests as workers, and furthermore that many of these educational workers have constructed young people in broad, politically expedient ways that position themselves as maximally valuable to the educational process. Educators, for instance, tended to define the needs of students to be urgent, demanding, and complex, such that only skilled workers with their particular "toolkits" could successfully guide them to academic success. Entrepreneurs such as Miguel, by contrast, emphasized young people's independence and lifestyle preferences not suited to the structured environment of the school, in order to situate his product as one better suited to their "best interests."

The persistent invocation of students' "best interests" and the convenient construction of these "best interests" around their interests as workers, I believe, is not a conscious or cynical process, but rather one in which students are taken up in flexible, abstract, and not entirely consistent ways to justify particular opinions about how the work of education should proceed. The disconnect between students and their educators renders their "best interests" debatable. These adults care about cultivating students into successful adults, but because students are seen as exotic and frustratingly difficult to reach, they cannot agree upon how to accomplish it. There is broad agreement that students are deficient, and therefore that the projects of mass education and adolescence are necessary, but definitions of these deficiencies and the strategies with which to address them differ. It is not that educational workers value their own interests as workers over the "best interests" of students, but rather that the two sets of interests are conflated. The struggle for institutional power is rendered indistinguishable from the struggle to serve the "best interests" of students.

The struggle over policies and practices detailed in the previous chapters, in this sense, is simultaneously a struggle over who truly has the "best interests" of the students at heart, and who, therefore, has a legitimate claim to mandating the best policies and practices of the educational technology project, the broader mass educational project, and ultimately the adolescence project itself. Yet to be answered, however, are some more concrete and consequential questions. How do these struggles among adults with different educational visions culminate in the actual reality of what goes on in the classroom? What are the actual experiences of students? Do students believe that this

system, putatively oriented to their "best interests" above all others, actually delivers on its promises?

This chapter foregrounds the experiences and concerns of students. Twelve students were interviewed at Catholic Academy, and nine at Public High, with slightly more girls than boys interviewed, and a roughly even distribution among ninth, tenth, eleventh, and twelfth graders. Most were interviewed in single-sex focus groups, but some were interviewed in mixed-sex groups or one-on-one interviews. Observational data, both in and out of the classroom, were also used to supplement these interviews. Foregrounding these experiences, as Smith (1987) and other institutional ethnographers have done for women (e.g., DeVault 1991), feminized workers (e.g., Diamond 1992), and young people (e.g., Best 2000, 2006, 2016) is ideally suited for this study, replete as it is with so many adults claiming to know what is best for students. Critical youth scholars such as Corsaro (2005) urge us to be skeptical of such claims, pointing to the tendency of adults—as other privileged groups do to those whom they have subordinated—to exclusively claim for themselves the right to define who young people are, whom they should become, how they are deficient, the ways in which they are to be paternalistically "helped," and, conversely, the ways in which they are to "help themselves." By imagining young people as the future adults they will become, and that they alone are qualified to assess the "best interests" of these imagined characters, adults claim authority to determine what is best for young people in the present—even when these ideas conflict with the actual needs, desires, and opinions of young people themselves.

One goal of this chapter, therefore, is simply to represent the underrepresented voices of students, to permit them to speak about their everyday lives in their own words. All participants were asked to describe their daily uses of digital technologies, whether in or out of school, sanctioned or forbidden, educational or social. They were asked what they use, when and where they use, and how and why they use. They were asked about their impressions of their peers' uses, how they believed those uses were similar or different than their own, and how they accounted for these similarities and differences. They were asked about the various rules, constraints, and mandates they confront, their opinions of these parameters, and the varying ways by which they make sense of and navigate these strictures.

But it is also an objective of this chapter to call attention to a more unsettling dimension to educational work, and the ways in which digital technologies are enrolled as both instruments of adult autocracy as well as tools of student agency and resistance. Students struggle to make sense of their everyday worlds because its features are defined by what appears to them to be the whims of parents, educators, and other distant adults. They navigate these worlds according to their own logics, at times internalizing adult frames while at times rejecting them. They express considerable sympathy for their teachers, to the extent that they recognize their shared position as subject to considerable external constraints—but emphasize that teachers are agents of these constraints as well, and demean teachers' skills much as teachers demean theirs. They have their own ideas about their "best interests," and many grievances about their everyday worlds that hold merit, which must be included in any thorough study of educational technologies.

Strictures of Spaces

Youths inhabit everyday worlds characterized first and foremost by adult demands, and their uses of digital technologies are inseparable from this broader context. What distinguished the spaces of school, home, and social media were the varying prohibitions and potentialities they encountered in these spaces. The youths interviewed flowed easily between descriptions of these spaces, comparing and contrasting what they could or could not do, and what they ignored, faked, tolerated, enjoyed, preferred, hated, stressed over, or resisted.

Among students at both schools, the primary theme was bafflement. Because they are excluded from many of the adult logics that structure their worlds, many of its features were incomprehensible to them. Students struggled to understand why things were done the way they were done, particularly when, from their standpoint, so many of these practices manifested obvious contradictions, inefficiencies, and counterproductive consequences. But it would be a mistake to assume that students were entirely unaware of the broader contexts and adult logics that shaped their worlds. It would also be a mistake to assume that students were universally disenchanted with their worlds, as many had adopted adult frames in part or in whole in order to make sense of them. Finally, it would be a mistake to presume that the common theme of bafflement originated from the same sources at both schools, as the causes of and reactions to youths' confusions were heavily influenced by socioeconomic class.

Students constantly discussed their uses of technologies at school in reference to labyrinthine rules that were inconsistently enforced. At Catholic Academy, where one of the stated values of the school is to cultivate "personal growth in an atmosphere of wise

freedom," students reported heavy surveillance of technology uses. "Objectionable content"—that is, content deemed to lack educational value—was blocked, internet activities were logged and occasionally reviewed, and the use of cell phones was forbidden during the school day, with students required to pay a 10 dollar fine to retrieve their phone if caught using it. Although students were required to use their laptops in many classes, multiple older students claimed that during previous years, teachers "wouldn't even let us charge [them]...You'd get in trouble if you brought your charger to school, let alone use it." One student cited a recent instance in which her boyfriend had e-mailed her at her Academy e-mail address, and she had received an "immediate [e-mail] response" from an administrator to only use her e-mail account for school. Another claimed that she had gotten in trouble during her freshman year for typing the word "kill."

The surveillance was so extensive, and enforcement so inconsistent, however, that it created a Foucauldian panoptical effect as students struggled to understand what was actually being monitored and how to avoid detection. Many students, for example, incorrectly claimed that the school "knew all your keystrokes," when in fact it only monitored activity transmitted through its network. Two freshmen incorrectly claimed that the school couldn't track students' web browsing activity if the browser was in incognito mode. ("That's what my [older] sister told me," one of them confided.) Changes in which websites were blocked were also difficult to track. In one focus group, a student asserted that the school blocks a lot of websites. "They used to block a lot,"

another student interjected, “but do they really block anything [anymore] besides Facebook?”

Nevertheless, many students had correctly surmised that “they [only] watch certain people” regularly, and that periods of lax monitoring would be occasionally interrupted by “waves” of greater vigilance and punishment. To be caught using the school’s network in prohibited ways usually meant to be summoned to the office of dean of discipline, who was widely feared. More than one student claimed that this dean had shamed them by reading their personal e-mails aloud to them in her office. A transgression also usually resulted in after-school detention, which would be “packed like sardines” during a wave of enforcement.

Interviews with Rita and Curtis revealed that these “waves” of inconsistent enforcement were partly the result of a lack of time to continually monitor activities. While certain flagrant actions were “flagged” so that they could respond immediately, other actions required sifting through long reports of activities on the school’s digital network in order to find unsanctioned uses of technologies. Yet this inconsistency was, to some extent, planned, as Rita or Curtis would make time to sift through these reports if they had not done so recently, even when they were busy. In this sense, the school’s model of surveillance was intended to be panoptical, to produce the feelings of uncertainty and anxiety that students reported, as a way to minimize transgressions even though the school lacked the ability to enforce the rules continually and consistently.

Among students, this practice generated widespread resentments. Catholic Academy students, due to their class position, perhaps felt entitled not to be surveilled. It

is also important to note that such surveillance of young people's technology uses exists amidst surveillance of many other activities, and thus may aggravate their resentment toward this broader phenomenon of constant surveillance—a phenomenon, as boyd (2014) and others have noted, that prompts young people to seek freer social spaces online to elude such pervasive surveillance in the first place. But their objections were not unfounded, as the uneven surveillance meant that many violations went unpunished. As a result, students felt incentivized to break the rules, yet would occasionally be punished for doing so without any warning or intelligible reason. "I got in trouble" during the last wave of enforcement, one student admitted in a focus group, "and she [her friend sitting next to her] did too. But we're not troublemakers. It's just random."

Upperclassmen were especially likely to connect the confusions and inconsistencies of technological prohibitions to a broader problem of capricious, incomprehensible rulemaking at the school. "They keep 'developing' the rules," one senior summarized after a discussion that had begun with rules about technology use had segued into a story about how the school had rejected the design of the seniors' class T-shirt. "They do things just to prove a point. They need to actually have [these rules] written out so we can understand them. It's like [a game of] telephone. The administrators start with 'a,' the teachers get 'b,' and by the time it gets to us, it's 'c.'"

Students at Public High reported similar difficulties, albeit in a less stringent atmosphere of digital surveillance. Students were permitted to use cell phones in the hallways, as well as in most classes. Few students brought laptops to school, both because many families could not afford them and because of fears that they would be

stolen: “I keep mine in my backpack, right next to me, at all times,” averred one student who did have a laptop. The list of blocked content was extensive: “Facebook, stuff with no educational purpose, game stuff, anime stuff, [TV] show sites, everything that has media, everything with [social] interaction except Twitter.” But Public High students (“most of the school,” by multiple estimates) were easily able to circumvent these restrictions by using one of the standardized testing websites as a proxy server. “It’ll let you go past anything,” a sophomore claimed. “I’ve known how to do this since grade school.”

At both schools, there were school-wide strictures. But there was also considerable variation among classrooms. To a large extent, with respect to both pedagogy (which will be explored in its own section below) and discipline, each classroom was its own domain. Differentiations of content, delivery, and structure, so integral to many educators’ idealized visions of what education should be, were in fact present at both schools—but were experienced by students as chaotic, uncoordinated, idiosyncratic, and confusing. Each time and space had its own logics of constraint and loopholes for agency. Each situation had to be learned, understood, and navigated. There was, these students sensed, a “hidden curriculum” (Snyder 1970) of academic and social norms to which they must adhere in order to be successful.

At Catholic Academy, the disciplinary mandates of technology were more standardized across multiple classrooms, even though pedagogical uses and the enforcement of disciplinary rules were not. At Public High, however, teachers had more autonomy in specifying the disciplinary parameters of technology use in their classrooms.

"About 75 percent are okay with it," one student representatively estimated, "[and] 25 percent forbid it." Within these 75 percent, however, there were considerable variations and ambiguities:

> Most of my teachers, they say they don't want you using your phone, and a lot of them say they don't care. But if they see you using your phone, they only get mad if you're not doing your work too. I don't get yelled at for using my phone, because I always get my work done. But the people that are like being loud, and goofing off, they're not allowed to use their phones.

As at Catholic Academy, where students lamented that the rules were not "written out so we can understand them," what could and could not be done at Public High was as much a product of unwritten understandings and the varying preferences of teachers:

> There are rules in the guidebook, but teachers have ultimate authority. We can have them out in the hallway. Some teachers will let you do what you want if you get your stuff done, but not when [an administrator] comes in. So you better have something [educational] to switch to.

Public High teachers, no doubt, would dispute the notion that they had "ultimate authority." Without the ability to see the hierarchies and networks of power operating at the school, teachers sometimes seemed to students to be the primary agents of an absolute, undifferentiated adult authority. But teachers did in fact have a considerable degree of autonomy over the conditions of their classrooms, and students were extremely sensitive to this capability, because the varying idiosyncrasies of classrooms had important consequences for the students attempting to navigate them.

Digital Divide: Access

It is perhaps a bit surprising to find that Catholic Academy students confronted more stringent restrictions on their technology uses than Public High students. There is a lengthy sociological literature on the reproductive nature of education (e.g., Bourdieu and Passeron 1977), the increasing militarization of public schools (e.g., Devine 1996), and the ways schools serving advantaged students tend to encourage the autonomy that future

generations of elites will require, while schools serving disadvantaged students demand the obedience necessary for future generations of workers (e.g., Anyon 1980). Why, then, did Catholic Academy not encourage "wise freedom" with technology? And why did Public High not police online activities with the same vigor as offline bodies?

Part of the answer lay in systemic disparities of access to digital technologies. This divide, heavily researched in the 1990s and 2000s, has been less emphasized in recent years. According to longitudinal data from the Pew Research Internet Project, roughly 95 percent of teens aged 12-17 are Internet users, a figure that has held steady since 2006. As of 2012, in the middle of this study's data collection, about 68 percent of these teens were able to connect at home. Furthermore, 80 percent owned a computer, 78 percent owned a cell phone of any kind, and 37 percent owned a smartphone. These figures were high even among teens living in households with less than $30,000 of annual income: 73 percent owned a computer, 69 percent owned a cell phone, and 39 percent owned a smartphone. (Economically disadvantaged households are more likely to use smartphones for all their Internet needs to avoid paying for a cable or DSL connection in the home, which is the likely reason why the rate of smartphone users among poorer households was slightly higher than that of the overall population.)

At Catholic Academy, all students leased laptops that had been purchased by the school. The prohibition on cell phones, therefore, was in part an attempt to compel students to use the school's laptops and networks, where their behaviors could be more easily monitored and controlled. The choice to punish phone users with a $10 fine,

moreover, underscores the assumption of wealth among the Academy's students, as well as its own institutional lack of funds.

The proliferation of laptops among students, however, does not mean that access was not an issue. In fact, Catholic Academy students reported frequent occurrences in which a lack of access prevented them from completing their work. One factor was the quality of student laptops, which were "not great" due to the school's dire financial situation. Working hardware and the labor to maintain it were deficient. "We've had the exact same laptop all four years," one senior told me. "They're older and have a lot of problems, and they just don't fix them. But I wouldn't want the freshman computers, because they're so small and keep breaking. Today, in Econ [class], this kid's [laptop] screen just shattered. Sometimes my mouse doesn't work." Another senior added that her laptop's battery used to last for six hours without charging, but now only lasts three hours. Students additionally reported difficulty charging their laptops due to a limited number of electrical outlets, and claimed that teachers were generally unsympathetic to this problem. Students wished that teachers would recognize the challenges of maintaining the laptop throughout the school day, while teachers either could not or would not accommodate delays or "special treatment."

Another factor was the extensive changes to the software on the students' laptops, implemented by Rita for financial and educational reasons. Nearly every student to whom I spoke lamented that an application to which they had once had access was no longer available. Not only were the reasons for these changes not always apparent to the students, but in some cases, "things were getting deleted [without] warning, and we lost

our previous work." The transition away from the proprietary Microsoft Office suite to the free Google Docs and OpenOffice suites, for example, was especially disconcerting. "Kids were mad about that," one junior reported. "The formatting was weird, and they were used to the name brand." "I hate OpenOffice," another chimed in. "But it's better than Google Docs." "It's hard to find things, hard to navigate," said a third. "I had a technology class in grade school, and everything we learned was Microsoft Office."

As I will show below, students at Catholic Academy reported high levels of negative stress. Furthermore, control over their workflow was a primary means of claiming agency amidst countless demands and structure. In this sense, failing hardware and changing software were more than an inconvenience. They were obstacles, hardships, and time-consuming delays in a process that had little tolerance for them. Much like teachers, students felt they had to fight to carve out a workflow that met the demands of the school.

The constant turnover in hardware and software at times disrupted these work processes, leaving the students to wonder why, if the point of the school is to help them to succeed, it seemed incapable of "putting a system [of hardware and software] together, making it work, and sticking to it." In general, these students understood that hardware would sometimes break, and software would sometimes have to be changed for various reasons beyond their control. But then they could not understand why, for example, the school had invested in tablet laptops when none of the teachers were taking advantage of the tablet features, or why a popular course management system had been replaced by another that the teachers largely shunned. If saving money was the reason for abandoning

software popular with students, why weren't these wasteful expenses targeted as well? If better educational outcomes were the reason, why weren't the new hardware and software used? It was hard enough to master the varying classroom environments and impenetrable rules of the school. Unreliable hardware and software made it even more difficult.

At Public High, however, there was a far more pervasive lack of access. With many students unable to afford or willing to risk bringing a laptop to school, the primary hardware was students' cell phones. With the resources provided by the school too scarce, too broken, or too occupied with the demands of standardized testing, nearly every teacher and student with whom I spoke reported that the practice of teachers asking students to look up information on their phones during class was a common one. To prohibit phones at Public High, therefore, would be to deprive teachers and students of their primary source of digital instruction and learning. (It is also worth noting that mobile learning does not cost the school in network provisioning and maintenance—and so, in effect, by failing to provide adequate technological resources, the school had outsourced the expense of maintaining a twenty-first century classroom to its often impoverished students and their cell phone data plans.)

While most Public High students had phones, and "everyone who has one" brought theirs to school, other resources such as computers and printers were far less abundant. This focus group excerpt among three mixed-race Public High juniors vividly describes these conditions and their frustrations:

> Student 1: A lot of teachers expect you to always have Internet access. They always expect you to have computers at home. I don't know if it's because of [their ideas about] our generation, but

> they're always like, 'Yeah, you can just do it at home.' And I'm like, 'What if we don't have a printer?' Which I do, but it's like, 'You're just expecting me to go home and print this four page essay, and you're not paying for my ink.'
>
> Student 2: I know a lot of people who don't have it at home...I have to bring my flash drive [to school], and during [study hall], I have to go to places that have computers, and I do the work there, and then I print it out in those classes. Because I sort of have access to a computer at home, but I don't have access to a printer.
>
> Student 3: Yeah, I don't have access to a computer or a printer.
>
> Student 1: My mom eliminated all excuses not to do homework, so I have everything I need at home. [Laughs.] But kids that don't have everything, it's like [the teachers are] just like, 'Sorry, and there's your [low] grade.' And I'm like, 'What?!' They can't help it. Some parents can't afford that kind of stuff. I used to go to the library, because for a long time we couldn't afford it. But then the library costs to print the paper, and you have to sit and wait for a computer. They're letting technology take over our work, over pencil and paper—which I prefer typing—but still, not everybody can do that.
>
> Student 2: Yeah, this is a public school, it's supposed to be free to go here. But then they expect you to buy poster paper to make projects, and they expect you to have a computer and be able to print it and have ink to do that. It gets really expensive to do homework, because of technology. It used to be you could just write it on a piece of paper, and turn it in, and it cost nothing. But now you have to like go through all this stuff.
>
> Student 3: Some people have plans after school, like some people play sports. They don't always have time to go to the library, and type it out, and print it. They expect like 100 percent of your day to be on school. And some people can't get a ride to the library to print it. They just expect you to get it done, and if you don't, they're not going to feel sorry for you because you can't afford a computer. They're just going to be like, 'Oh, well, your grade's down now.'
>
> Student 1: They should give us passes to go to the computer labs [when they're not being used for testing]...They complain about us making too much noise and using our phones all the time, but they're not giving us an alternative thing to do. If you don't have work to do, then you don't have work to do.

This excerpt is notable for several reasons: the hidden costs of successful schoolwork, the class- and age-based assumptions of teachers, and the displacement of blame for structural failures—characteristic of a neoliberal frame—onto the students. Students without access are expected to seek out digital resources at their own time and expense, and may be prevented from doing so by factors largely beyond their control. Meanwhile, the migration of work onto computers means that sometimes students "don't have work to do" because of an unwillingness to let students move about the school and

use the few available digital resources when not in use. Finally, although the typing work has moved to computers, the mechanism for turning in a paper is not digital—students at Public High (unlike at Catholic Academy, where papers are submitted digitally) are expected to print what they do on the computer, and it is this requirement that causes as much hassle and expense as the requirement to use a computer. What seems straightforward to middle-class teachers produces additional hardships for impoverished students at Public High.

"I Blocked My Mom:" Concerted Cultivation, Ambivalence, and Impression Management

But greater access to digital technologies was not the only reason why Catholic Academy had more stringent restrictions than Public High. Research in recent years has increasingly explored the rise of new wealthy and middle-class parenting practices, commonly called "concerted cultivation." In this system of childrearing, Lareau (2003) and others have argued, parents with high economic and/or cultural capital in this era of increasing inequalities leverage their advantages to position their children to compete for the scarcer positions of privilege that are likely to exist when they become adults. These practices include the filling of leisure time with large amounts of organized activities, encouragement of diverse social and intellectual talents, and greater parental advocacy on behalf of the child in the school.

At Catholic Academy, descriptions of students' everyday lives closely mirrored the paradigm of concerted cultivation. It was not surprising, therefore, to find that digital technologies were enrolled to further the goals of concerted cultivation. But it was also apparent that digital technologies were often seen by adults as a threat to the goals of

concerted cultivation. It is this ambivalence toward technologies, and their role in the broader project of turning privileged youths into adult elites—in which school and home were more frequently collaborators than adversaries—that seemed to account for the stronger desire of Catholic Academy educators and parents to police their youths' technology uses. In other words, because the stakes for students' future socioeconomic success were higher at this elite school, the felt need of educators and parents to use digital technologies in ways that encouraged this outcome was higher—but so too was the felt need to aggressively prevent uses that impeded this outcome from becoming a "distraction," or worse.

In addition to student and teacher uses of technologies, both schools offered services that made it easier for parents to track their students' academic performances. (This was most poignantly demonstrated when, in the middle of a focus group I conducted at Public High, a student received a text message from his mother, scolding him for failing to turn in a civil rights timeline that had been due in his U.S. History class.) As students described their daily uses of technologies to me, it was apparent that informing parents of their whereabouts and activities, negotiating rides or extended time away from home, and responding to parental queries or demands was a major category of daily use. Although many commentators lament the "always connected" capability of cell phones, parents found it useful as a way to always be able to (attempt to) exercise authority over their children.

Strictures of technology use at school were accompanied by strictures at home, although these were more fluid and variable. The type and degree of restrictions, multiple

students claimed, “depends on the kid.” Older, well-behaving, and high-achieving students were all less likely to be required to conform to strict rules. “Kids my age are a little more allowed to do whatever they want as long as they don’t do something stupid,” a junior at Catholic Academy observed. “Parents trust us till we give them a reason not to.”

But the same uncertainty that pervades school surveillance also existed at home. The same junior quoted above, for example, later admitted that his parents “used to look at our phones, but I don’t think they do anymore, at least that I know of.” The mere possibility that a parent might not engage in his or her right to unrestrained surveillance is experienced by this young man as “trust,” even though he understands this state of relative independence is conditional, may be revoked unilaterally, and for all he knows, may not even actually exist.

A deeper examination reveals that the strictures of the home “depended” as much on the parents as on the youths. Those who felt they were “trusted,” believed they had earned that trust, and therefore believed they were being treated fairly were the ones who attributed differences in parental restrictions to the behaviors of the youth. Others did not find their restrictions to be so fair. One young woman, for example, described draconian regulations which she attributed to “my dad [being] a single father, [and] so he has a ‘restrict my daughter’ type of mentality. He feels he has to check everything.” The rest of the group found this behavior strange since, in their opinion, “guys misbehave more than girls.”

It was common in focus groups to hear each participant describe different restrictions at home, with varying attitudes regarding their fairness, as in the example below:

> Student 1: I got my phone at Christmas my freshman year, and it had to be plugged in, in their room at 9 pm. This summer [between junior and senior year] I refused. I go to bed at 9:30 every night, so I'm very responsible...My parents have a lock on the home computer, and the wireless [Internet connection] goes off when the Christmas tree lights go off.
>
> Student 2: I don't have any rules. I don't know, I guess they trust me...My mom always tries to enforce [rules] but then she just never follows through.
>
> Student 3: I'm not allowed to have a Facebook [account]. They used to be strict about that: no online accounts without permission. I made a Twitter [account] without permission, so I was a 'rebel child.' Gradually they've stopped caring [about restrictions] so much.
>
> Student 4: My parents don't snoop on my phone. When I was a freshman, my mom read my texts. She doesn't do it anymore, but she reads my [younger] sister's texts...She'll hear stories on the news, about kids being dead or kidnapped or whatever...She sometimes stalks my Facebook.

In short, while some students felt their technology uses were fairly proscribed at home (certainly more than they felt they were fairly proscribed at school), many recognized that the nature of these restrictions were largely out of their control. Youths do not get to choose who their parents are, nor what their attitudes towards technology and discipline might be. They knew that any freedoms they had could be revoked at any time. If they were trustworthy, and felt that their parents acknowledged this, they felt lucky. Others, however, were not so lucky.

Student claims regarding these strictures were often contradictory. Many claimed, for example, that they "don't have any rules" at home. But further questioning revealed that many of these same youths did in fact have plenty of restrictions upon their technology uses. These ranged from restrictions upon the times (e.g., no use permitted after 9:30), places in the home (e.g., only permitted in the family room), or situations (e.g., no use permitted when company is over) in which technology use is permissible, to

more targeted restrictions upon particular activities, surveillance through monitoring software, requiring the youth to "friend" them through social media, or knowledge of the youth's social media passwords.

Lori, the senior quoted at the beginning of this chapter, described the common, complex relationships Catholic Academy students had with their parents regarding the use of technologies:

> My parents don't really have any rules, because they trust me. They know my password, so they can monitor me if they want, but they choose not to. When I was younger, occasionally my mom would check...When I was 13, I blocked my mom on Facebook. She got mad, but then she realized there was nothing to find...I let her see my [Facebook] wall posts, but not my friends'. I use privacy settings just to show the less controversial things...My mom doesn't know about my Twitter [account]. It's private, but with 200 followers. A lot of people at [Catholic Academy] use privacy settings, [because] sometimes random people follow you, and sometimes people tweet about personal stuff.

Even though her parents "trust" her, they still retain the right to monitor her if they were to choose to do so. As a result, Lori feels compelled to perform a complicated juggling act, using privacy settings and secret accounts to manage her appearance to different audiences. When Lori claims not to have any rules, it seems that she really means there are no rules around which she cannot successfully navigate, or perhaps that the relative lack of restrictions at home compared to those at school is as close to "no rules" as she encounters in her everyday world.

danah boyd (2014) and others have written compellingly about how the strictures of offline spaces compel young people to seek freer spaces online. As adults have increasingly attempted to regulate and structure these online spaces as well, young people respond in the ways epitomized by Lori: using multiple social media accounts, keeping some activities secret, and leveraging privacy settings to placate the adult gaze while still

maintaining a space for more authentic, unregulated interactions. They also may "hide in plain sight," a phrase boyd uses to describe indirect or coded communications in which the intended meaning is only known to a select few. Another tactic Lori used, for instance, was "subtweeting:" "where you tweet about someone without saying who you're talking about." Just as she used Facebook and Twitter to perform to different peer and parental audiences, she used subtweeting to perform to her 200 followers in a way that would cause adverse consequences if she were to directly name the person about whom she was tweeting.

The use of Facebook as a "front stage" space and Twitter as a "back stage" space (Goffman 1959) was nearly universal among the students interviewed at both schools. According to the Pew Research Internet Project, in just one year, between 2011 and 2012 (when much of this ethnographic data was collected), the percent of American teens using Twitter more than doubled from 12 to 26 percent. Multiple students asserted that "Facebook has really taken a back seat" to Twitter and other social media, such as Tumblr, Pinterest, and Snapchat. "I put normal musings on Twitter," one student summarized. "Facebook, I take more seriously." In one focus group of four Catholic Academy seniors, I asked if they let their parents see their activity on Twitter: "Nonono!" they all exclaimed simultaneously.

The waxing and waning of the popularity of particular social media sites among teens is typically interpreted by adults as further evidence of teens' capricious and trend-following nature. In this narrative, teens simply have to participate in the latest and greatest fad, and anything in which adults are also participating automatically becomes

uncool, causing them to abandon it in droves. But from the perspective of the students to whom I spoke, they had become less interested in Facebook not by choice, but by compulsion. One reason was due to differing levels of accessibility: at both schools, Facebook was successfully blocked, while Twitter was either not blocked or could be accessed in spite of the attempted blocks. Not being able to get to Facebook, one student asserted, was "a big reason why Twitter is so big. Because Facebook is blocked, so what else are we going to go on?"

But even if Facebook were more accessible, it was a space that had largely been co-opted by the adult gaze. "Colleges look at your Facebook [now]," one student noted. "You don't really want anything [there] that could be controversial, so it's more formal, whereas Twitter is more crazy." It was the sort of public space, another student averred, that that students would "use to [announce] what colleges they got into...You have to watch what you say a little more."

As Facebook increasingly required more demanding performances from young people to placate adults, it was simultaneously becoming a space where adults were settling in and loosening up. "Moms," many students observed, enjoyed using Facebook themselves to connect and socialize with one another. Given the demands of middle-aged motherhood about which feminist scholars have written extensively (e.g., Hochschild 1989), it is likely that they were gravitating to Facebook for the same reasons as young people: to find freer, back stage spaces in which to express themselves and cultivate social capital amidst the stifling demands of their offline spaces. Their increasing use of Facebook, however, was tantamount to the eviction of young people from the back stage

space in which they had invested considerable time and effort, forcing them to rebuild their online networks elsewhere. It is unsurprising, therefore, that students spoke derisively about the invasion of "moms" and their particular forms of socialization, since their presence augured the demise of this freer space. As the next sections will show, this dynamic was also present in the classroom, where the autonomy teachers fought so hard to maintain was at times predicated upon the deprivation of autonomy for young people.

Educational Uses in the Classroom

In classrooms at both schools, variation, not consistency, was the norm. This was the case even at Catholic Academy, where there was a concerted administrative effort to standardize certain aspects of the experience. There were entirely paperless classrooms, and there were others that "don't use it at all." Most lay in a middle range that included "half and half" classrooms, as well as those that were mostly digital, or only digital "once in a while for something not in the book." For all the justifiable concerns teachers had regarding their pedagogical autonomy, these data suggest that they did in fact have considerable flexibility in how they could choose to run their classes.

The list of educational technology uses reported by Catholic Academy students is, at first glance, impressive. Students were frequently using their laptops to read articles or online books, complete worksheets or study guides, take notes, type written assignments, research topics, put together projects or presentations, watch or create their own videos, access course documents, take quizzes, use course-specific resources such as Khan Academy, Rosetta Stone, or the Adobe creative suite, participate in virtual lab experiments in science classes, and arrange a piece of music in music classes.

Yet what is most striking about this list and students' descriptions of classroom uses is that the vast majority were simply digital transpositions of educational processes formerly done without digital technologies. Although some extended or supported what could be done in a classroom without technology, such as the virtual labs or recording technologies in science classes, Catholic Academy students reported few truly creative, innovative uses. This finding is resonant with the preponderance of empirical literature, which suggests that in spite of the wide variability of resources and pedagogical efforts among schools, with the exception of "'model' schools and classrooms with enthusiastic teachers and well-resourced students basking in the glow of the 'Hawthorne effect,'" the everyday reality at most schools is "a largely bounded and restricted engagement with technology" (Selwyn 2011:25).

At neither school, then, were digital technologies used in any frequent or widespread manner to transform pedagogy; it was far more common that technologies were taken up instead to reproduce existing pedagogies. But of course, there were exceptions. At Catholic Academy, for example, students reported that they were asked to produce digital comic strips in Spanish. This assignment was generated by Nicolette, the loudly resistant Spanish teacher who in the introductory vignette of Chapter 1 had described the requirement to produce educational videos as "abuse." Rita had worked closely with her, other interviews revealed, to design this assignment to meet the school's requirements for use of digital technologies. But as she herself admitted, and other students confirmed, such assignments were very unusual in her class.

An overall dearth of creative uses of digital technologies was evident at Public High as well, with the exceptions being spoken of by students in similarly anomalous terms. One student, for example, spoke approvingly of a "[former] teacher who didn't have a smart board [in his class], so he turned his Wii into an interactive board" to use instead. But this example was cited amidst a disapproving description of how such innovations were unusual in his experience: "Smart boards—you can do so much with them," he asserted. "I've seen some creative uses of it, but [most] don't put in the effort to learn [how to use] it. They need to do something to grab us." Creativity at Public High, it seemed, was abundant among teachers willing to devote their own time and expense to compensate for the school's shortage of adequate resources, but less so with respect to pedagogical innovations.

Without laptops for students at Public High, their descriptions of their everyday uses revolved around three devices: the school's computer labs, the smart boards in the majority of classrooms, and their own mobile phones. Students listed an impressive number of computer labs at the school—5 mobile labs of laptops that could be circulated to different classrooms, and 7 desktop labs that teachers could sign out—but echoed teachers' complaints that computers in these labs were often broken, and the precedence of using these labs for standardized testing (or monthly practice tests conducted throughout the year) rendered the labs frequently unavailable. Smart boards were largely used to deliver content in the "sage on the stage" method derided by educational technologists, but with deficiencies of access and skills delimiting the uses of these devices. "To a certain extent [teachers] encourage" educational uses of technologies,

confided one Public High sophomore who had transferred after spending a year at a well-resourced private high school. “But a lot of them are limited in the scope of how they use it, so they’re also limited in when they use it.” Students also reported that many teachers used various third-party educational services to host course documents online.

Most Public High students claimed that they used their phones extensively in class, both for educational and personal uses: “I use my phone 24/7 at school for everything” was a common, hyperbolic claim. But others regulated their use because of their concerns about how personal use would affect their academic performance: “I don’t want to get distracted from my work,” another explained regarding her relative lack of use, “because I know it will happen.” Looking up information, taking notes, and using various third-party educational apps (e.g., flash card apps) were the most common uses of cell phones students described, but some described more creative uses of their phones. One student, for example, reported that she commonly used her phone to take photos of notes displayed by her teachers, rather than frantically writing them down as many of her classmates did. Students wished teachers were helping them to learn more effectively using their phones: “I think teachers should give us websites and apps [to use],” one student argued. “We can’t help ourselves if we don’t know what we’re looking for.” But as the next section reveals, students at both schools tended to find teachers’ technological skills to be significantly lacking.

Digital Divide: Skills

While access to digital technologies is a primary shaper of the social, educational, and technological conditions in a school, Hargittai (2002, 2010) and others have

compiled compelling evidence that skills, literacies, and aptitudes required to effectively use digital technologies is a "second" (but no less significant) digital divide.

Among the most important findings of this literature is the exaggeration of age as a significant variable in the overall distribution of technological skills. Critical youth scholars have argued that the ascription of skills to the current "digital generation" of youth is unfounded. Empirical studies support this conclusion, with most research examining the skills of multiple groups concluding that age is only a significant predictor of digital literacies among those who are oldest (over the age of 50) when other socioeconomic factors that better explain disparities, such as class and educational attainment, are accounted for.

Among socioeconomically similar populations, then, we may expect age to appear as the most salient variable explaining different levels of digital skills. But when populations differ with respect to variables such as class or education, these variables will be seen to be more significant predictors than age. These hypotheses, implied by the quantitative studies of Hargittai and others, were largely affirmed by these data. At Catholic Academy, where the school provisioned students with their own laptops and most students had a privileged socioeconomic background, student competencies were taken for granted. Among the well-educated but older teachers, however, skill levels were more disparate. Catholic Academy students therefore tended to explain these varying levels of skill (and their consequences in the classroom) using the language of age, as in this focus group discussion with two freshmen:

> Student 1: English is really good. We use [technology] half and half...For Spanish, we have a really old teacher. She doesn't really know how to use technology.

> Student 2: Yeah, we use Rosetta Stone [language-learning software], but otherwise no technology.
>
> Student 1: Mrs. Erickson [the English teacher] knows technology, but that's because she has younger kids.
>
> Student 2: Let's see...art class...Mrs. Hoffman is old. We don't use it a lot.

As the students described their varying classroom experiences, they commonly attributed differences in technology uses to varying levels of teacher aptitudes with technology, and attributed these varying skill levels in turn to age. Exceptions could be explained by having children, or taking a particular interest in technology, but it did not occur to these students to ask why, for example, having children had provided Mrs. Erickson with a level of technological competency, but not others who also had younger children. The blanket variable of age, along with a few individual circumstances to explain exceptions, was sufficient to describe the variations they saw among adults' technological skills in their everyday worlds.

But several Catholic Academy students to whom I spoke were sensitive to the perpetual state of lack and "becoming" in which teachers found themselves. Seniors, for example, emphasized that teachers were "definitely" using technologies in their classes more than they had in their earlier years at the school. "Teachers are getting used to it, experimenting with it, implementing using tech in class more," a junior said. Nevertheless, most students remained unhappy with many of their teachers' skill levels. "Teachers' presentations aren't very good," one frustrated senior claimed. "They don't know how to use it [technology] to their advantage." While some students were more willing than others to credit some teachers for skillful uses of technologies, all students claimed that many teachers were deficient—and a few were woefully so.

Public High had its share of technologically deficient teachers as well, and students were eager to share such stories. “We have a teacher who’s horrible at it,” one student related. “Every time he tries to use something, the class is shouting directions at him.” “My English teacher doesn’t even touch the smart board,” a second said. “She’s afraid she’s going to mess it up.” “When [teachers] change something and mess it up,” described a third who was particularly proficient at technologies, “they always look at me or Jason. If we’re in the same class, it’ll be up to us to fix it. One time a teacher asked me to help fix a teleprompter, and the cable wasn’t plugged in. I literally just had to go like this: [plugging in motion].” More general assessments were more evenhanded, but as at Catholic Academy, Public High students tended to describe their teachers in more negative than positive terms. “They’re learning it [technology],” one student said, “but not as fast as they could learn it. We have a lot of old teachers that ask the students, ‘How do I do this?’ They need to teach the teachers how to teach us.”

As described in Chapter 4, Public High students were not necessarily skilled at using technologies, a condition which surprised Public High teachers who had falsely assumed that all young people were skilled with technologies. Students were aware of these stereotypes and highly critical of them, as these two students passionately argued in a focus group session:

> Student 1: They just say, ‘You should know how.’ And if you say you don’t know how, they’re just like, ‘What?’
>
> Student 2: They expect you to know like exactly what MLA format is. And not everybody does, because we didn’t specifically learn that. And they expect you to know how to type. But they don’t specifically teach us that. They expect you to know how to use Google, and figure out which sources are good sources, and how to cite them.
>
> Student 1: Like after this [focus group session], I’m going to turn a project in [late], because I didn’t know how to cite the sources. And [my teacher] was like, ‘I could’ve explained it to you.’

> And I was like, 'I asked you to! You didn't.'
>
> Student 2: They say, 'You should know how to do this. You're in high school.' But we haven't been taught this, at all.
>
> Student 1: They really expect you to know how to do everything all by yourself.
>
> Student 2: Just because we live in the twenty-first century, and we grew up around this stuff—but like the kids that are four [years old] today, they're the ones who are going to be able to do all this stuff. We grew up, and not everyone was rich enough to have a computer, and smart phones were kind of new while we were growing up.
>
> Student 1: As teenagers, they expect us to know everything about technology. But honestly, I think it's only cell phones and social media, instead of education-wise. Because we don't go on[line] to cite MLA format. We go on to text with our friends. So we have Internet smarts, but not education.
>
> Student 2: The only reason I sort of know most of this stuff is because I went to private school growing up, and my grandma was a computer teacher. So I have to help a lot of the students, because the teachers don't teach the students how to do it.
>
> Student 1: The teachers themselves don't know how to do it.
>
> Student 2: They don't know what they're doing, and we don't know what we're doing. So it doesn't really work.

At Public High, in sum, disparities of teachers' technological skills were compounded by disparities of students' technological skills. Students correctly traced their own deficiencies to their lower socioeconomic origins, and observed that teachers were effectively blaming and punishing them for this.

To teachers, such deficiencies among their students challenge the assumptions about young people around which they have structured their classes. They are reluctant to take time out of their class to teach these disadvantaged youths skills that, in their opinion, these students "should have" acquired a long time ago, even though they acknowledge that this needs to be done. But to students, who encounter an endless parade of teachers who either cannot or will not adapt to this reality and teach them these skills, this reluctance is inexplicable and maddening. Teaching them these skills that others had

acquired due to their wealth and accompanying resources, in their view, is supposed to be part of what education is about. They wonder: is it really so hard to find the time to teach us these basic skills? Computer classes were offered at Public High, but these were not required courses. Many students told me they wished they were—but the "tested" subject areas took precedence, and so, teachers and administrators to whom I spoke claimed, there was not enough time to fit in a required class.

It is too reductive to claim, as the second student did, that at Public High "[teachers] don't know what they're doing, and we don't know what we're doing." But it is clear that significant percentages of both groups were deficient in important ways, and so it is hard to escape her final summation: "It doesn't really work."

Stress, Boredom, and Other Things That "Suck"

"Each teacher uses [technologies] differently, has a different organizational structure," one student summarized. "It depends on how OCD the teacher is. There's not a lot of consistency between your classes."

"It's always something new we need to learn" was a common student complaint with respect to technologies, as it was with teachers. While an educator may respond by wryly observing that learning is in fact the point of education, much of what must be learned is not primary course material and skills, but the secondary concerns of how to navigate a particular teacher's style, structure, or preferred software. In this sense, the differentiation and teacher autonomy present by design can be a distraction or even a hindrance to the primary instructional goals.

While teachers are preoccupied with concerns of pedagogical technique, conceptualizing students as the unfinished objects on which their pedagogical "tools" work, students struggle to orient themselves to the peculiarities of six to eight classes at a time. Taking multiple classes at a time, and frequently discovering that what was acceptable in last year's class is no longer acceptable in this year's, or that a teacher expects them to have knowledge or skills they "should" have but in fact don't, yields a dizzying range of parameters and structures to learn. While many teachers imagine their classes are governed by a set of objective standards that fairly assess students' performances, students are more likely to see a set of highly subjective, idiosyncratic, and fallible demands that may or may not be fair in their expectations or evaluations.

From this standpoint, every class becomes its own treacherous path to navigate. Cheaters and coasters may prosper, and even the most dedicated and talented can be punished for reasons beyond their control. If, in effect, teachers imagine their classrooms are a microcosm of the American Dream, where all can succeed who work at it and rewards are fairly distributed according to merit, students quickly learn that teachers can be arbitrary in their rewards and punishments, and that their ability and effort is no guarantee of success. It is no wonder in this arrangement that the high-achieving students are plagued by constant stress and anxiety, since their best still may not be good enough, while other students become more concerned with cutting corners and performing to a teacher's liking, rather than investing sustained efforts that may not pay off in the end anyway.

At Catholic Academy, where the academics were at a college preparatory level, concerted cultivation was the norm, and parents were quick to remind their children that they are "paying [for them] to go here," it was normal for students to experience severe stress. Because this stress was so normalized, it often manifested in subtle ways—such as a freshman, listing the technological devices she has at home, observing "I have a Kindle—not that I have time to read anything [for fun]," or a sophomore revealing that she does not often exchange text messages with her friends, except when they are "texting over homework questions and stressing out with each other." But older students were more forthright about the stresses they felt, emphasizing the importance of technologies as a way to relax, escape, or express frustration. "People really utilize Twitter as a venting site," said one senior. "We don't necessarily want to be doing work all the time. Because we do work in school, and then we do homework, and most of us have extracurriculars. Sometimes it just gets to be too much. You just need to vent."

If they are able to successfully navigate these stresses, however, Catholic Academy students could look forward to future advantages and successes as a result. Speaking with one group of seniors in December, as they shared with me their anxieties over the impending first round of college admissions to be revealed later in the month, I asked them if they felt prepared for college. All responded with extreme confidence, noting that previously graduated students with whom they had kept in touch had claimed to have experienced minimal adjustment issues. "I feel so prepared for college," one exclaimed. "I can crank out a five page paper in an hour. I think college is going to be

almost a little less stressful...Academics here, if you actually do your work, are hard. I'll be up till 2 AM three nights in a row, sometimes, doing work."

In short, Catholic Academy students were optimistic that bearing the stress would be worthwhile in the end. But the stress was at times debilitating and excruciating. To use technologies to successfully blow off steam without a negative effect to one's grades, therefore, was commonly articulated as a matter of pride and even a sign of maturity, as in this excerpt from a focus group of senior women who used the language of age and gender to describe differences in "distracting" uses of technologies:

> Student 1: The only thing that really distracted me was sophomore year, with Skype.
>
> Student 2 [to me]: We're all really good students.
>
> Student 1: We get distracted, but we know when to work. Other people get distracted and stay distracted. I care too much about my grades.
>
> Student 3: Most of the girls, but maybe [only] 10 percent of guys, fall into that category. There are a handful of people who just don't care at all, but the majority of us are able to stay on task when necessary.
>
> Student 2: The guys here are 'different.' [drily, with air quotes]
>
> Student 4: Yeah, they don't care at all. They're very immature, and they have no desire to get good grades.
>
> Student 1 [interrupting]: It might just be our grade—the junior guys are really smart.
>
> Student 4: Our [senior] guys just want to beat the system. They work too hard at trying to beat the teachers, then hate the school for getting in trouble—but it's their fault, actually.

In this excerpt, internalizing the enormous external pressures of attending this elite school is articulated through the language of "caring" about one's grades, which is in turn linked to maturity. As a result, these "good" female students agentially claim their stresses, the technological "distractions" that are used to cope with them, and the academic accolades they are rewarded, distinguishing themselves from the "bad" male students that "just

want to beat the system." Work and stress are thus hitched to notions of becoming an adult and escaping the derisive label of "immaturity." It is also an implicit critique of a gender order in which young women must work hard for their rewards, while young men do not invest the same amount of work and sometimes successfully "beat the system."

But as much as these young women "care" about their academic outcomes, they simultaneously resist the institutional order through impression management and furtive personal uses of technologies. Estimates of how many Catholic Academy students used technologies for non-educational uses during the school day varied widely by age, with freshmen and sophomores insisting "not many" did so, but juniors and seniors proclaiming 80 to 100 percent did so. It is a learned skill to be so adroit at succeeding in school while simultaneously using technologies for personal use: as Lori noted in the excerpt at the beginning of this chapter, this arrangement effectively "teaches the student how to multitask and spend their time efficiently." But it is also a process that trains secretive, stressed workers to live a double life without becoming openly resistant. With the promise of future successes to induce their compliance, enduring the demands of high school is a temporary purgatory for these privileged youths who hope to be on their way to more fulfilling, enjoyable endeavors.

But not all young people submit to these demands so easily. At Catholic Academy, more open resistors were scorned for their lack of effort by educators and peers alike, and in extreme cases were asked to leave the school. Public High students, however, were more vociferous in their critiques of adult demands. While Catholic

Academy students tended to describe them as nonsensical irritants, Public High students tended to feel aggrieved or disengaged.

If the primary theme of Catholic Academy students was stress, the primary theme of Public High student was boredom. This was most poignantly underscored in a mixed-sex focus group, in which a male sophomore described his varying technology uses while his junior girlfriend interjected occasionally to chide him for not working harder:

> [The male student has just received a text message from his mother, scolding him for failing to turn in a civil rights timeline for his history class.]
>
> Male Student: I think I just started failing that class.
>
> Female Student [teasing]: Maybe you shouldn't play Pokemon on your phone all day.
>
> Male Student: Hey! I don't play it all day. Only during academic seminar. And English. And Geometry. Because they're all extremely boring. I'm sorry, because they are.
> I'm never on my phone during a difficult class. In U.S. history, I'm not on my phone, but I'm failing, because I don't do anything. It's boring because they're going over what we went over in middle school
>
> Female Student: He's a bad example for this, because during academic seminar, he plays on his phone when he could be doing his homework.
>
> Male Student: Oh, crap. I had homework.

This young man, in short, sounds like every educator's nightmare: the epitome of a lazy, disengaged, and unreachable student, too distracted by the internet and video games. Yet he has real grievances: he is understimulated either because the class itself is boring, or because he has already been taught the content before. Later in the session, he elaborated on this point:

> In a hard class, I'm always paying attention. Part of effective technology use is effective teaching. If teachers were actually engaging, they [the students] wouldn't be using the tech as a distraction...My history teacher integrated more teamwork stuff, and now everyone pays more attention. If we play Jeopardy, no phones are out.

Teachers understand that some of the content they teach or pedagogical methods they employ may be "boring" for the student, and that it is important to "grab their attention."

Yet there are a number of reasons why teachers might not make a more concerted effort to engage their students: because students' impression management leads them to the mistaken conclusion that students are engaged when in fact they are not; because adopting new forms of pedagogy requires them to invest scarce time and effort; because they believe their "boring" content is necessary, or their "boring" methods yield the best results (and is therefore "good for them"); because they believe part of their job as educators is to resist trends toward entertainment and short-term gratification in education, and train students to tolerate their futures in workplaces replete with boring, numbing work (i.e., to prepare them for "the real world"); or because they believe the students who do not overcome their boredom are unreachable, or not their problem.

Rita, Catholic Academy's technology coordinator, described to me an incident early in her career, when she resolved to follow around a student for a week, sitting in on all of her classes to better understand how technology was being used at the time in the school. She lasted only two days, she said, because she found the boredom of this student's everyday classroom experiences intolerable: "It was just so *boring*!" she exclaimed, shaking her head and scrunching her face as if in pain. "So boring."

She identified this event as an especially significant one in the formation of her attitudes toward educational technology: it pushed her to advocate more creative, interesting, and transformative classroom uses, she said, and led her to become less sympathetic to teachers' fears that students using technologies would be a "distraction." "If they're bored, and you're not engaging them," she argued, "and the technology isn't there, then guess what? They're still not paying attention. They're just pretending they

are. The only difference is they're taking advantage of the technology that's there to engage themselves, instead of sitting there like this [slightly slouched with blank eyes, superficially appearing to pay attention]."

At Catholic Academy, boredom was rampant, but because of the pressures to succeed, this aggravation was subordinated to the stresses of navigating the demanding gauntlet of school and structured activities. In this sense, these students' class position helped to render their boredom more tolerable, since delayed gratification is easier to tolerate when the gratification (i.e., the opportunities resulting from being well-educated) is more likely to eventually be realized. At Public High, however, the "distractions" resulting from the boredom were significant enough that the high-achieving students complained about other students distracting them—albeit with not as much scorn as the Catholic Academy students. One student, for example, speaking about the school's blocking of non-educational websites, said:

> [The blocking] is really good, because some people watch weird stuff, and some people find ways around the block and use distractions purposely not to work. This guy on his phone, in my English class, will answer it in class. His voice is loud and deep, and I can hear it over the teacher. It's annoying.

Catholic Academy students tended to be secretive and conscientious about not distracting others when they themselves were indulging in personal uses, yet the ones who did not sufficiently "care" were outed, labeled, and scorned. It would have been unthinkable for a student at Catholic Academy to answer his or her phone during class. At Public High, distractions were more open and less considerate of others, yet because it was normalized to some degree, it was tolerated as an annoyance.

In spite of this boredom, Public High students tended to be quite supportive of teacher autonomy, even as they complained about the burdens of navigating multiple classroom structures. “Great teachers might be too old to use technology,” one student claimed. “I’d rather they teach the old-fashioned way.” One reason for this sympathy was because, as previous excerpts have shown, Public High students were more attuned to the struggles of teachers who were underprovisioned with both technological resources and the professional development to learn how to effectively use their technologies. When teachers are repeatedly compelled to ask students to use their phones to look up information for them, and some teachers “don’t even know how to turn [their] laptop on,” these constraints are inescapable. One student, a sophomore who was the student representative on the district’s technology subcommittee, identified this problem as the most salient in his opinion. “Teachers should have their own say [in how they teach],” he said. “Certain ways they teach, they’re not comfortable with. It’s the 21st century. I don’t think they need to be fully using [technologies], but finding ways to use it more. It’s really up to the state and district to provide teachers with more resources and do better at teaching them how [to use it].”

But it was also apparent that Public High students, like teachers, were resistant to administrative attempts to restrict teachers to “teaching to the test,” or to standardized curricula. “If they [teachers] had a little more choice,” one student asserted, “they could teach us what they want to teach. They can be creative if you give them a little leeway. It’s like the administrators are teaching us instead of the teachers.”

Common Core curricula had been instituted at the school during the year in which I conducted fieldwork, and students were unanimously critical of them, with some of their most vitriolic comments reserved for these new curricula:

> Common Core sucks! My English teachers get so dumb with it. They're horrible. They could be teaching us stuff we need to know...They give you the exact same thing no matter how different you are, so it's not really the teacher's choice anymore...Like an example of a thing Common Core makes you do is [to] predict a weather forecast for Romeo and Juliet, and write out on how the weather would affect the story. It's just not relevant to English at all. It should be pure facts...I don't understand Common Core.

Another criticism was similar:

> Common Core is really boring. It demotivates a lot of people. You learn less because you aren't paying attention. It incentivizes being on your phone. You just write down what [the teacher] says to write down, and then do nothing for the rest of the class...It's aiming at everyone instead of being more one-on-one.

The creative, higher-order learning encouraged by Common Core standards—precisely the characteristic that educators find most attractive—is precisely what Public High students detest. As a result, just as teachers would be likely to minimize or dismiss the problem of student boredom due to their attitudes regarding pedagogy and young people, so too might they be tempted to dismiss these complaints as well. But again, there are real grievances: the functional impact of Common Core in this school, students reported, was to encourage both rote copying (not an exercise that promotes higher-order learning) and assignments that were so contrived as to be transparently empty exercises. Education has always relied heavily upon fabricated exercises to cultivate skills, of course—but Common Core, as these students experienced it, made no attempt to connect their work to any larger purpose, and so they found it to be pointless and even somewhat insulting.

"I Have My Own Command Center:" Multimedia Agency

In every interview and focus group, I asked students to describe in detail their technological and educational practices. Smith (1987) and other institutional ethnographers seek descriptions of everyday experiences, but also the practices that are discursively obscured when actors employ taken-for-granted categories in their talk. What I found was that control over uses of their technologies was a topic of great importance to young people at both schools. Students took great pride and care in employing technologies in their own ways to achieve their educational, personal, and social goals.

In contrast to stereotypes of young people's excessive attachments to technologies, student preferences regarding educational uses of technologies spanned the entire spectrum of use and non-use. Multiple students referred to themselves as obsessive-compulsive—"OCD"—as a way to describe their strong attachments to particular ways of doing educational work. This is yet another instance in which personal and psychological causation was imputed to describe feelings regarding technologies that cannot be fully understood without attention to their social circumstances.

Some examples of students from both schools illustrate the variety and specificity of these practices. One Catholic Academy tenth graders, for example, said, "I can't imagine being without a computer. I like taking handwritten notes, but my hand cramps up and I can't keep up sometimes." Her friend in the same focus group, however, expressed a preference for written notes: "I like handwriting notes, because I like highlighting. I have my different colors [of highlighters] that mean different things and everything. I'm kind of OCD about that." One Public High student declared, "I like all

my notes on my computer, because then I don't have to take binders home and can have all my notes there." But another Public High student insisted that this practice was rare: "Only one kid [in my classes] uses his laptop for notes. I like to write out my notes. I've heard that if you write it then you remember it easier. I'm so used to the keyboard that I just go through the motions." At Catholic Academy, where laptop use was more common, students had varying preferences regarding how they used their laptops. "Yeah, I use [my laptop] all the time," one student said. "Netflix, music, Skype, school—I have my own command center, with 15 million tabs open. Drawing on the computer, Facebook, music..." Other Catholic Academy students, however, were more organized and minimalist in their laptop uses. "I like to have as few tabs open as possible. Everything has to be clean," a student told me. "I'll check email and grades at the same time, but not while I'm doing other work. I use it every night for homework. I like to write it down on paper, then type out my homework online, and print it."

Although Catholic Academy students had more options regarding the ways in which they could accomplish their work, the range of practices and lack of consensual preferences were common to both schools. The variety was especially apparent in focus groups, when students were likely to compare and contrast their various ways of accomplishing tasks with technology. The interest students took in hearing about others' routines revealed that it was not something they often talked about amongst themselves; even participants who described themselves as good friends were sometimes surprised to hear about how their friend differently structured his or her technological and educational routines.

Because of their attachments to particular routines and ways of doing schoolwork, students craved autonomy in how they did their work, wanting to process and produce in the ways with which they were both familiar and could also complete the work most quickly and effectively. The previous section emphasized that students are sympathetic to teacher autonomy, with no systematic bias for or against teachers who use technologies, ultimately preferring whichever pedagogical methods would elicit the best results. This support, however, came with conditions: (1) students generally did not want poor, ineffective teachers to have the autonomy to continue teaching poorly and ineffectively. (2) Students generally did not want boring or unreasonable teachers who had turned these characteristics into a virtue to have the autonomy to make no effort to make their subjects interesting, or to continue to make unreasonable demands of their students. (In other words, they understood that some classroom experiences would be boring and that teachers were supposed to challenge them, but resented these conditions when they were excessive or lauded.) Finally, (3) students generally did not want teachers to meddle in how they got their work done, letting them do "whatever works for them," so that they did not have to worry about further complications in addition to completing the work. In an environment attentive to "learning styles" and the challenges of personalizing mass education, students were even more insistent than teachers that they should have the ability to learn in the ways that were "best" for them.

These additional complications could just as easily involve "overtechnologizing" an assignment as "undertechnologizing" it. "Overtechnologizing" is a category that involves uses of technology that make an assignment more difficult to complete, or

essentially require "technology for technology's sake." Examples include insisting upon digitizing an assignment which a student could more easily do handwritten, or requiring students to learn new software to do an assignment successfully. "Undertechnologizing" encompasses the inability or failure of the teacher to make an assignment easier to complete by using technology when such means are available, such as not making requirements available on a course website, or requiring students to print an assignment that could be uploaded digitally instead.

In short, students did not recognize technology use as an indicator of pedagogical quality, knowing that it could complicate as well as simplify. They were far more concerned with the effects of the technology use upon their own work processes. Was it faster, more effective, more stimulating? Did it distract from, hinder, or complicate the process? But most importantly, were they able to exercise influence over the way they completed the work, doing it in the ways they preferred, regardless of whether these particular ways embraced or eschewed technology?

Most of these students with whom I spoke–at both schools, but especially at Catholic Academy, where the availability of different productive resources was greater—had developed their own preferences for productivity. Juggling multiple classes, they also had to manage plenty of demands without the additional complications that an ineffective use of technology—or, conversely, a restriction against an effective use of technology—could require. Moreover, students generally did not feel that their teachers were tolerant of additional delays and complications that resulted from technology uses. (Many teachers, unaware whether or not a student might be lying about the reason for their

tardiness, refused to accept assignments that were submitted late due to a technological malfunction, for example.) As a result, in the race against time to meet the demands of their teachers, technologies could be a hindrance as well as a help.

Recently, a third digital divide, in addition to access and skills, has been postulated by Tufekci and Brashears (2014), which they have called "cyberasociality:" a deep distaste, unwillingness, or inability to socialize and relate to others through digital media as one does through other (offline) media. Noting, for example, that cognitive impairments such as dyslexia did not become apparent until mass education attempted to make entire populations literate, they suggest that some may struggle with or be unable to do the cognitive work required to communicate via digital technologies.

What the data of this study suggest is that there is a analogous phenomenon of "cyberaproductivity" in which students or educators feel compelled to do certain working, teaching, or learning tasks using non-digital means, even when digital means are available or required—encompassing, for example, the feeling that one "has to" write notes by hand, or print a paper in order to review it. However, there is no evidence that it is best characterized as a "personality disposition," as the progenitors of cyberasociality have done. These data suggest, rather, that this widespread disposition is the result of a complex interplay among external institutional pressures, cognitive workflow, and embodied activity. At least as important as the cognitive work required to use digital technologies are the large amounts of routinization required to succeed as teachers or students, and the prevailing atmosphere of no time, with little to no tolerance for failures that occur due to lack of time. Beyond the demands of school, many students must

manage extracurricular activities, family and friend networks, and their own personal development into young adulthood. Teachers must manage the academic development of dozens or hundreds of students, as well as their own professional development, relationships, families, and social, personal, and emotional needs. The irresistible force of technologizing the classroom is often thwarted by the immovable object of constrained access, skills, and time.

In this sense, then, students and teachers are similar. They perceive an imperative to adapt in a system that does not tolerate the time or space to deviate from their established practices of working and coping. Some are able to enroll technologies into their work processes with minimal disruption, but others struggle immensely. Those who struggle feel, with some merit, that the demands being made of them are unreasonable. They care about their success (or did, before they despaired and became less invested in their work) and were able to be successful without using digital technologies, but must now navigate the additional obstacles and assume the additional burdens that teaching and learning with technologies demands.

But in general, students and educators do not fully understand the systemic pressures other groups of actors must confront as the irresistible force of technologizing the classroom proceeds apace. As a result, they tend to blame one another for the nonsensical and sometimes debilitating transformations occurring in their everyday worlds. In this process, technologies are sometimes seen as a means to further this objective, and sometimes as a means to resist it. Because they are one of the more visible signs of the accelerating pace of capital's institutional capture of education, and the

considerable stresses this process imposes upon actors in educational systems, to some educators, technologies are a symbol of all that is wrong with our era of educational transformation: objects onto which the anxieties and resentments more accurately attributable to the excesses of states and corporations in this contemporary era can be projected. But because technologies can also be taken up to protect, preserve, or even more deeply entrench the values and interests of educators that are under siege as education is further structured around the values and interests of capital, technologies can also be seen by imaginative workers like Rita as an opportunity for reform, rebirth, and retrenchment.

To students, however, educational technologies are mundane. They do not have the same connotations, symbolic resonances, value-laden judgments, and passionate beliefs about technologies as adults. When I asked students to tell me their favorite course, and asked them to describe to me how much technology they would use if they were teaching that course, they struggled to answer. This was not because students did not have strong beliefs about how they should be educated; rather, it was because they did not ascribe any special salience or inherent value to technologies. All were vague in their responses. All asserted that they would use it to some extent. Some made a particular point of emphasizing they would not use it excessively. ("Like in Bio, we use it too much," one Catholic Academy student insisted. "I get really sick of it sometimes.") But the commonality among all responses is that they would permit students to use technologies to whatever extent is "best for them." In essence, every student had a similar response: I would use technologies whenever it was helpful for my students—when it

made their lives easier, when it increased their learning, and when it empowered them to do their best work. When using technologies would not be helpful, or would be harmful, I wouldn't. Why would I do it any differently?

But many of the classes in their daily experience do not manifest this principle of student empowerment. Technologies are scarce at Public High. At both schools, what technologies are present are subject to delays and needed repairs. Teachers often integrate technologies inconsistently and uneasily, reproducing processes that could be accomplished without technologies. Sometimes it appears technology is simply being used for technology's sake, creating additional complications with no benefit to the student. Other times, innovative attempts are unsuccessful for myriad reasons. Students who feel capable of self-regulating resent blanket prohibitions against technology in the name of discipline or imposing a captive audience. Students who are prone to distraction suffer academically when teachers "let [students] get away with" using technologies for personal purposes, whether openly or clandestinely.

Distinction and Identity

The same multimedia orientation existed with students and their social or personal uses of technologies. They do not tend to apply blanket judgments to technologies, nor do they use them as mindless acolytes. Rather, they use technologies in situations, drawing upon the technological affordances and situational parameters to decide which medium best accomplishes the goals of a particular interaction.

These choices are usually made silently and automatically, although youths can articulate their reasoning when pressed: e.g., Facebook is used as a front stage public

space for adults, prospective colleges, and acquaintances, while Twitter and Instagram tend to be used as back stage spaces. Students at both schools tended to use text messaging for informational queries, brief check-ins, and to avoid being drawn into longer exchanges (although a few were much more prodigious texters); face-to-face for the most important interactions; and phone calls for situations that fall between these two extremes. For many, technology use, or a lack thereof, is something they simply react to, not something they especially think about. It either is or is not part of their multimedia repertoire for accomplishing their goals at any given time.

Young people do, however, sometimes have strong opinions about specific forms of digital technologies. It is worth noting that texting and Twitter, in particular, were slightly more likely to elicit strong feelings of enjoyment or derision. It is these media that were the most used for back-stage interactions amongst themselves. But it was also these media that were perceived as the preferred media for superfluous, superficial, or "dramatic" interactions. "I think it's really just girls and drama, and it's easy to keep up with drama on Twitter," one female student claimed during a focus group. "That is *the* reason why I don't use Twitter!" another female student interjected. "I don't really like texting," a student confessed in a different focus group. "Me neither," a second agreed. "I text my boyfriend all day, but I'm a terrible texter," continued the first. "Yeah, you both are horrible texters," said the third participant, a much more prolific texter, with a bit of irritation.

Such opinions are manifestations of several concurrent processes: internalizations of adult norms and expectations, desires for distinction from one's peers, and feelings of

ambivalence toward the cultural practices associated with youth. It is overly facile to assert that these youths were constantly compelled to live double lives—one an outward and sometimes dispiriting performance for adults, the other seeking furtive relief and peer socialization away from the adult gaze. This would neglect the desire of youths to distinguish oneself from the practices of their peers—or if not from the practices themselves, from the manner in which these practices are performed. The previously described instance, in which the young Catholic Academy women distinguished themselves from the young men who failed to adequately "care" about their academic performance by asserting that they, by contrast, "know when to work," is a good example of this complex interplay between the ambivalence associated with adult expectations and peer practices.

Except among those who explicitly forbade themselves from doing so for fear of too much "distraction," the use of technologies for non-educational, personal, social, and forbidden purposes was widespread at both schools. "We usually divide our time between these [forbidden] sites and the work," said one Public High student. "We'll have a site up on our phone that relates to our work, and then we'll have [a game] open, or whatever." Students knew precisely under which circumstances they could or could not get away with these uses. "It's not all classes," a Catholic Academy student insisted:

> We do it most during Spanish—she's not aware. A lot go on[line] in English. Not in Biology, because it's so intense. In Theology, they do it, but he won't get mad or yell at you. Some classes you can just kind of have it out. We'll just pause, take notes, and then go back to gaming...[In another class] we have to be careful, because he'll walk behind us. He'll see they're not taking notes, so he gets angry.

But the desire to avoid distraction and succeed academically was not the only determinant of whether or not students engaged in forbidden technology uses. Some

simply found some uses to be unethical or excessive. One student who freely admitted to frequently using digital technologies for many non-educational purposes during the school day, for example, spoke derisively of how many of his peers took advantage of opportunities to use digital technologies in ways he did not approve. “A lot of kids like [a commonly used quiz-taking application] because they’ll cheat,” he admitted. “But I prefer not to do that. Or one person will take notes, and share it with the rest of the class. It kind of bugs me. I do my own work,” he concluded with pride.

An especially notable instance of peer distinction occurred during a focus group with two freshmen women at Catholic Academy who were unusually strict in following the rules of acceptable technology use, and vociferously complained about their peers who were not, using language echoing many adult criticisms of teens and their technology practices. “I don’t go on those [forbidden] sites [at school],” one said. “People who do that annoy me so much. I want to pay attention and have too much respect for my teachers. But a lot of people are bored and do it.” Facebook, Twitter, and texting were especially singled out for scorn. “I don’t check Facebook a lot,” one said. “I don’t go on there for fun, because people annoy me.” When I asked why, she replied, “Because on Facebook, people have more guts. They say more than they would in real life. Or they update their status with something really sad, or post a bunch of pictures of themselves. A lot of moms use Facebook too—they post everything about themselves, or pictures that are really dumb.” “I don’t like how it’s set up at all,” the other concurred. “Both it and the people are annoying. I don’t even want Facebook. I was forced to [make a profile] by my older sister. She told me if I didn’t have one, I was ‘antisocial.’” Twitter, they agreed,

was largely a source of drama, which in their opinion was "more addicting" than Facebook, "because people think they have to tweet about everything in their lives." Both felt texting was "pointless." "I just spent eight hours with them [in school]," one observed. "We're already connecting over Twitter, so we don't have much to say over text[ing]."

The age and class position of these young women suggest an explanation for their unusual vitriol: as new students at an elite high school, they had heavily internalized their privileged class position and what some regard as the neoliberal fetishization of "choice," as the below exchange reveals:

> Student 1: I think [people using technologies for non-educational purposes] are stupid. They don't disguise it at all, and it's a distraction. But people who care about their education don't do that.
>
> Student 2: Yeah, it's *your* choice, and it affects *your* grade. People who care will be smart about it. They're paying to go here, so I don't even understand it at all.
>
> Student 1: I mean, you're paying to go here, so what's the point? Just go to public school then. Because teachers let you do that in public school, I think.

In general, freshmen and sophomores at Catholic Academy with whom I spoke had the most negative attitudes toward their peers who used technologies for non-educational purposes. Juniors and seniors were much more tolerant of these practices. They did not invoke the expectations associated with their parents "paying [for them] to go here," nor did they speak derisively of public schools.

Upperclassmen did, however, continue to use the language of "choice" and "caring" about one's academic performance to distinguish themselves from those who, in their opinion, did not make good choices or care sufficiently about their academic performance. In other words, even though they became more skeptical of adult frames

and broke more rules regarding technology uses over time, they retained the frames of choice and desire that provide a convenient explanation for why individuals do or do not succeed. It is easy to see how this emphasis on personal attributes—and not the dispiriting social structural conditions from which they are shielded—will encourage them as adult elites to blame the victims of these disadvantages at Public High and elsewhere for their lack of a quality education, instead attributing their lack of successes to their bad choices, and lack of sufficient desire or effort.

Regardless of the class position of the students with whom I spoke, however, it is not surprising, given the constraints, demands, and affordances that characterize their everyday worlds, that young people's phones, laptops, and other technologies are significant to their identities. Adults who deride these attachments and invoke them as evidence of young people's immaturity fail to appreciate that digital technologies enable some of the few spaces in which young people are able to practice some of the "wise freedom" that encourages maturity. Technologies contain the music and apps they love, photos of the people and experiences they cherish, and the fruits of their academic toils. They contain artifacts all of the spaces and activities of their everyday worlds: school, home, friends, and extracurriculars. If they are able to successfully keep contents of their technologies out of the adult gaze, they may very likely experience these technologies as extensions of their selves, more authentic than any performance that must adhere to adult demands.

From this standpoint, it is not surprising that students respond with such distress when these technologies are taken away from them. The sense of personhood and

authenticity projected onto these technologies, therefore, is suggestive of an alternate or complementary explanation for these behaviors beyond the hypothesis embraced by Turkle (2011) and others of technological addiction or obsession. Just as the increasing presence of "moms" and other adults was experienced by these young people as an act of force compelling them to socialize elsewhere, taking away a laptop or a cell phone can be experienced as a personal attack on one's self. At Public High, as I observed in Chapter 4, female teachers spoke of instances in which they or one of their colleagues had been threatened with physical force by a male student upon attempting to take away his phone. While such incidents are condemnable and cannot be understood without attention to assertions of masculine power, they also cannot be understood without attention to the powerlessness that characterizes young people's everyday experiences, and the deep sense of personal investment and identity-making that exists in (and through) young people's phones. The gender of the participants shapes the extent to which the adult authority is recognized, to which the angst is expressed openly, and to which this expression takes the form of a physical threat that asserts male dominance—but the demand to take the phone away and the angst this demand elicits is rooted in age relations.

"Having the phone around is such a comfort," one Public High student rhapsodized. "It's [sitting] on my lap right now—I just need it out there. It's like comfort and security in your hands." Such a statement may be indicative of an unhealthy attachment to his phone. But it is clear that for this student and others, the technological artifact is connected to a sense of personhood that is frequently subordinated to adult

demands in their everyday experiences. To have the capabilities afforded by the smart phone or the laptop amidst the deprivations of their offline situations can be exhilarating. If young people are sometimes unable to regulate their uses and require intervention, this is not necessarily because they are too immature to make good choices, or the part of the brain regulating restraint is not yet fully developed. The conditions of deprivation invite the subsequent excesses. Just as a new driver may zip around at unsafe speeds, or a college freshman may unwittingly induce alcohol poisoning, the removal of previously stifling restrictions may be too euphoric for safe behavior. Having been regulated for so long, the youth may struggle to regulate himself—not because she is incapable, but because she has been prevented from doing so. Like the inmates in Goffman's (1961) *Asylums*, young people may pine for "removal activities" such as drunkenness or media consumption to escape the stifling institutional demands they confront: "If the ordinary activities in total institutions can be said to torture time, these [removal] activities mercifully kill it" (p. 61). The inevitable harms that occur when young people embrace these removal activities to excess is then cited as justification for still greater institutional restrictions upon them.

Most of the students with whom I spoke at both schools insisted that they were able to regulate their technological uses themselves—and, given the openness with which those who struggled to regulate their technological uses admitted their difficulties to me, there was no reason to disbelieve them. They claimed to have good grades, to care very much about their academic performance, and espoused a belief—as Lori articulated in the excerpt that began this chapter—that learning how to switch back and forth between

one's own endeavors and performance to institutional demands was one of the most valuable skills taught in the "hidden curriculum" of educational technology. As schools continue to aspire to train obedient workers, this arrangement does not completely stifle the individual's will. But it does successfully force these undesirable desires underground, essentially permitting students to clandestinely engage in technological distraction to relieve the stresses and boredom of the institutional demands as long as they "know when to work." Petty infractions are largely tolerated but at times incomprehensibly punished. The order and authority is rarely challenged openly, even as it is widely resented privately—but this matters little, both because the overlooking of many "distractions" is necessary for the students' emotional well-being, and because it permits students to believe they are gaming the system—when, in fact, they are learning how to conceal their true desires and resentments, how to normalize and cope with excruciating stress and boredom, and how to know *when* to work without questioning *why* they are working. It is hard to escape the conclusion that, in computer programming parlance, this arrangement is "a feature, not a bug."

Yet the resentments remain under the surface, and as significant artifacts in which students invest their identities, digital technologies can be enrolled in expressions of this resistance. The most notable example of this during my fieldwork occurred when Catholic Academy experimented with a "BYOD" (bring your own device) arrangement that permitted students to bring in their own laptop, phone, or digital device, rather than being compelled to use the school-owned laptops. This experiment predated the beginning of my fieldwork and ultimately was not adopted by the school. However, the

seniors gleefully told me about how they used this experiment as an opportunity to assert their identities:

> On the first day, in the first class, everybody took out their phone, just because they could. It was awesome. Some of the teachers really hated it. They told us to put them away, but we were like, "This is my device," so they couldn't do anything about it. I didn't even care that it was slower to use my phone than it would've been to use my laptop. I was just excited to finally get to use it.
>
> They let us do it for a whole quarter. I don't know why they didn't let us keep doing it. I didn't do any worse in my classes. Nobody else I know did either. Some of the teachers must've complained about it because they had a harder time telling if we were paying attention or whatever. I'd much rather use my own phone or my own laptop than these old school laptops.

What may have appeared to an adult onlooker as an insignificant, immature gesture with no productive consequence was in fact loaded with meaning for these students. Their true thoughts and feelings, like their phones, are so often required to be hidden. The contents of their phones resonate with the contents of their selves. To be permitted to openly display them—even when teachers disapproved—was thus experienced as exhilarating.

Conclusion

Without much detailed knowledge of the adult debates over their best interests from which they are largely excluded, students at both Catholic Academy and Public High found many aspects of their everyday worlds baffling. Many students to whom I spoke were not clear about what the rules and expectations are, much less why they exist, or how they are supposed to benefit from them.

It would be a mistake, however, to presume that students are unaware of the contentious relations among the adults charged with their development. Even if they are not aware of the particular political, economic, and social factors converging to structure their everyday worlds, they are very much aware of the consequences. Even though they lack the specialized terminology to name sociological phenomena, they speak

compellingly of how digital divides remain prevalent, how emotionally draining it is for young elites to navigate the school-and-home synergy of concerted cultivation at Catholic Academy, and how inadequate provisioning at Public High has combined toxically with the limitations of standardized testing (and, increasingly, Common Core) to leave many students behind.

Though resonant with previous research and sympathetic to the challenges of education work in some ways, the student perspective is most valuable when it contradicts adult frames. Students at both schools spoke of dispiriting boredom, debilitating stress, empty exercises, confusing practices, incomprehensible rules, and arbitrary enforcement. Students are far more attuned than educators to the ways in which the education project does not exist purely "for their own good;" to the ways in which socialization and subjugation become indistinguishable in their many experiences with adults and their institutions; and, perhaps most importantly, to the ways in which—despite the many divisions and differences of opinion among adults, and despite of the efforts of various adults to position themselves as noble advocates for students' well-being—the education and adolescence projects are at heart oppressive and collaborative endeavors in which *all* adults participate.

These findings can be disturbing to educators who have committed their identities and careers to what they wish to be a project that is empowering for youths. There is no doubt that many educators truly aspire to this ideal. There is also no doubt that, in some fortunate circumstances, space exists within institutions for caring, committed educators to partially realize this ideal. But it is important to underscore that from the student

standpoint, the realization of this ideal is certainly not the norm—and furthermore, in the rare event this ideal is in fact realized, it is a matter of luck. Students do not get to choose who their guardians and what their socioeconomic conditions are. They rarely have influence over which schools they attend or who their teachers are.

In short, students do not experience a system that inherently benefits them, although some believe the assertions of adults that it will in fact benefit them in the long term. This is more likely at Catholic Academy, where the benefits of socioeconomic class mitigate the harsh constraints of concerted cultivation, and students expect to be able to succeed in college with relative ease after serving their time at an elite, college preparatory high school. But even these students with brighter prospects experience many aspects of their everyday lives as grueling or senseless. At Public High, where doing the work is no guarantee of future success, and many students recognize that they and their peers are already far behind in the "race to the top," anger and frustration is even more prevalent.

Young people's generalizing views of adults are, in part, a reflection of young people's inability to see the divisions that make adults a far more heterogeneous group than they appear from youths' standpoint. But this view should not be discounted. Hava Rachel Gordon, in her important (2010) ethnography of youth activists, observed that privileged youths who had previously seen police officers as well-intentioned individuals increasingly came to see them as instruments of oppression as these youths became politically active, expressed their dissent, and were targeted by the police as a result. This lesson—that the recognition of the humanity and good intentions of one who has

assumed an oppressive institutional role is a privilege, contingent upon not being targeted for oppression—is an important one. Although the adolescence project is more diffuse and less characterized by physical violence than the project of the state against political dissidents, it is no less oppressive. It is not merely the rules regarding technology use that these youths find to be "so hard to follow." It is also many of the characteristics of their everyday worlds, and the very logics upon which the oppressive adolescence and mass education projects are sustained in a time and place that professes such devotion to freedom.

As a result, although education workers are devalued underdogs engaged in a worthy struggle against economic and rationalizing elites in one sense, in another sense the struggles of the school must be acknowledged simultaneously as *internal* struggles among cultural elites for the right to define who young people should be. While in one sense who wins these struggles is extremely important, from the student standpoint it is less so, since the triumph of more benevolent dictators does not alter the fundamental character of the dictatorship. The struggles and good intentions of teachers should not be devalued, but must be fully contextualized. In the end, neither total victory by capitalists attempting to reshape education as a commodity, nor total victory by educators seeking to preserve their status, autonomy, and a vision of education as a public good would resolve many of the grievances articulated by the students with whom I spoke. As the concluding chapter of this study will argue, these findings are essential to keep in mind when considering solutions to the problems presented in these data.

CHAPTER SEVEN: CONCLUSION

Although educational technologies are hardly ubiquitous, as many had predicted, they are certainly present to some degree in the vast majority of schools—and the discussion regarding how best to use them has dominated educational debates for decades. “In the 1990s and 2000s,” one long-time Catholic Academy administrator told me, “I used to go annually to the NASSP [National Association of Secondary School Principals] meetings. And the two big topics there, just about every year, were (1) brain-based teaching and learning, and (2) using technology to enhance teaching and learning.” There are a number of large organizations specifically dedicated to the promotion of educational technologies in schools, catering to educational technology professionals such as Rita as well as enthusiastic administrators and teachers. The International Society for Technology in Education [ISTE], for instance, has members in over 90 countries, an annual conference with attendance exceeding 20,000, and annual revenues of nearly $20 million (ISTE 2014). There are, furthermore, thriving online communities of educators and educational technology professionals sharing ideas and information—including the approximately 6,000 flipped classroom teachers with online content whom Miguel sought to attract to Lessonr.

A full examination of this broader context is outside the purview of this study. Yet such persistent efforts to encourage the implementation of educational technologies—in schools of all types across the United States since the 1980s—pose a dilemma that provided the impetus for this study. Despite these considerable efforts,

implementations have been messy, uneven, and incremental. Where some schools still lack access to basic technological infrastructure, such as Public High, others are well-equipped but do not always take full advantage of their resources, like Catholic Academy. While a school may have a few eager teachers who have integrated technologies in the innovative, transformative ways long touted by educators and other educational commentators, most educational technology uses are little more than digital reproductions of processes previously done with pens and paper. Within-school variations are wide, both with respect to attitudes toward educational technologies and the actual implementation thereof. And yet, despite decades of anticipation, effort, and incremental rather than revolutionary implementations of educational technologies, the transformation of education by educational technologies is still felt by many to be right around the corner. This study investigated the factors that account for this incongruence between expectation and reality, and what social processes—culminating in the school, but by no means entirely confined to it—may explain why digital technologies are so often used in a bounded and restricted manner, but rarely in a manner that is more innovative or transformative.

In this inquiry, I relied upon David Buckingham's (2007:79) formulation of the "the educational technology complex:" the field of adult stakeholders both internal and external to the school, alternately collaborating and competing with one another to shape the uses of educational technology in schools to adhere to their own visions of what education should be. The political, economic, and social processes culminating in—and manifesting through—this field of adult stakeholders, their polices, and their practices

enormously influence uses of educational technology in the classroom. The project of articulating this complex web of actors, relations, and processes, moreover, has been largely neglected by sociologists and educators alike. As a result, I sought to explore this messy, contentious field through extensive interviews, focus groups, and observations of entrepreneurs, educational technology professionals, school administrators, teachers, and students at two high schools. My data suggest that local outcomes in educational technology are best explained as the result of the collision of what I have called *the adolescence project*—the contested endeavor of adults, through their management of the socially constructed age category of adolescence, to define who youths are and whom they should become—with the recent market-driven transformations in education that are traceable to the historical ascendency of neoliberal political and economic reforms.

In this conclusion, I further develop the main findings and implications of my research. I first synthesize the results distributed across the three previous chapters, showing how the implementation of educational technologies is a product of mutually constitutive processes of work, ideology, and technology. I then consider the implications of this study for researchers, policymakers, and educational practitioners.

The Educational Technology Complex: Work, Ideology, and Technology

Despite their considerable differences with respect to size, socioeconomic class, racial and ethnic composition, public/private governance, academic achievement, and whether or not the school had embraced an institutional effort to use educational technologies, educational technology outcomes at Catholic Academy and Public High were the result of a complex array of occupational, ideological, and technological factors.

These factors were mutually constitutive—that is, rather than existing in easy, unidirectional, causal relationships, each factor both shaped and was shaped by the others. Access to technologies and the requisite skills to use them effectively, for instance, was indelibly shaped by the socioeconomic location, occupational constraints, and prevailing pedagogical discourses at the school. At the same time, however, the technological circumstances at the school—such as the availability of technological resources, the presence or absence of technological skills among educators and students alike, and the success or failure of ongoing institutional efforts to remediate these deficits–greatly informed the working conditions and ideological orientations of major actors in the school.

At Public High, technologies and the requisite skills to use them were both lacking and unevenly distributed. Teachers reported purchasing technological equipment at their own expense, and hoarding and hiding school equipment. They also reported wide disparities in provisioning between the STEM and liberal arts subjects, and an extreme shortage in necessary maintenance and repairs. Most students carried mobile phones, which in many classrooms were the only means of internet connection available. But few students brought laptops to school, fearing they might be stolen, and a significant minority lacked the necessary digital technologies at home to complete required coursework. The decision of the district to invest heavily in very expensive (yet visually impressive) smart boards, rather than more prudently allocating funds to equip a greater percentage of classrooms with more basic educational technologies, such as projectors and student laptops, compounded the overall lack of resources. In effect, by compelling

teachers to purchase their own equipment and students to use their mobile phones to access the internet during class time, the school and district forced teachers and students to pay for many of the resources that were in fact used for educational purposes.

In many cases, Public High educators and students alike lacked the necessary skills to maximize the educational technologies they did have. Public High teachers, because they assumed their students had a universal familiarity with technologies, were both puzzled and disturbed by their lack of technological skills. Public High students, meanwhile, derided their teachers' inabilities to use technologies effectively, and harshly criticized the school's failure to teach them basic technological skills. Teachers had little means to learn how to use educational technologies more effectively, as professional development oriented toward educational technologies was nearly nonexistent.

This study, therefore, suggests that the costs of provisioning the necessary resources for successful uses of educational technologies—including hardware, software, and professional development—is still prohibitive for all but the most affluent schools. Compared to Catholic Academy, Public High was on the other side of the "digital divide," lacking basic access and skills and confronting other unique challenges: the disruptions of a multiyear construction project, the onerous technological demands of state-mandated standardized testing (which were prioritized over and often precluded everyday class uses of shared technologies), and a more challenging classroom disciplinary environment.

But this is not to claim that educational technology at Catholic Academy was without its struggles. On the contrary, the school was badly struggling with its finances,

and budget cuts had reduced the quality of its hardware and software offerings. More technologies, meanwhile, meant greater demands for maintenance and support. The school had accumulated an enormous financial debt for years of service provided by the third-party company it had contracted to meet these support needs, while Curtis, the school's technician, was often compelled to rummage through boxes of discarded computer parts in order to cobble together enough working equipment to meet the daily needs of the school. Its predominantly affluent students were skilled in uses of digital technologies, but in spite of considerable professional development resources, many teachers struggled to acquire the skills necessary to effectively use the technologies at their disposal. It was an uncomfortable role reversal, in which these deficient teachers became students, and spoke of their efforts to master technologies as an arduous, unending struggle. Many of these teachers, such as Nicolette, internalized feelings of inadequacy, fear, and shame, while others lashed out angrily at the presumption that one could not be a good teacher unless one was also skilled with educational technologies.

The greatest difficulty at Catholic Academy, however, was of a social and occupational nature, rather than a technical one. Unlike Public High, where teachers mostly spoke of school administrators as advocates on their behalf to the district hierarchy, uses of educational technologies at Catholic Academy were hotly and rancorously contested. Even before relations had deteriorated to a new low following the introduction of Miguel and Lessonr to the school, Catholic Academy teachers and administrators repeatedly clashed over the issues of teacher autonomy and the right of administrators to impose further demands upon already overwhelmed teachers, including

prescriptions regarding what, when, how, and how often educational technologies should be used. More technological resources, in other words, meant more resources over which to fight for control—and at Catholic Academy, stakeholders constantly sought to impose their will upon the school's uses of educational technologies.

Among the most interesting findings of these data is the importance of disruptions to one's workflow to understanding attitudes regarding educational technologies. Tufekci and Brashears (2014) have recently proposed a third digital divide to account for the difficulties of some technology users to relate to others through digital media as they do through other media. While their research focuses primarily upon socialization, this study uncovers evidence of such a phenomenon in educational work, as students and educators both reported in large numbers that they "had" to perform certain tasks using pen and paper, or were "OCD" about their workflow preferences.

I propose that these preferences are less the result of personality and more a product of a complex interplay among external institutional pressures, cognitive workflow, and embodied activity. Large amounts of routinization are required to succeed as educators and students. Because of the difficulties of imposing such routinization upon constantly changing and unpredictable work circumstances—and the expectation, consistent with neoliberal understandings of work, that adapting to such turbulent occupational demands is "part of the job"—administrators, teachers, and students at both schools felt overwhelmed. These groups all assumed that the technologies upon which they were dependent would work smoothly, and the consequences of delays and disruptions caused by malfunctioning technologies were significant. Educators did not

feel they could assume the burden of "one more thing," whether it was to invest the time to learn how to use a new technology that might soon become obsolete or "go away," accept the increased risk of technological malfunctions over which they felt powerless, or cope with the additional disciplinary concerns engendered by student uses of technologies.

Students, meanwhile, were already compelled to adapt to the multiple idiosyncratic structures, expectations, and demands of their teachers. They craved some measure of predictability and control over their workflow in order to complete their work as soon as possible, whether to alleviate the debilitating stress of high achievement or the crushing boredom accompanying much of their academic work. Students also feared reprisals from their teachers, who—despite being subject to frequent technological malfunctions themselves—frequently punished students for delays that were sometimes out of their control, even though impoverished students often had to go to great lengths to access technologies (at Public High) or repairs to educators' technologies were prioritized over students' (at Catholic Academy).

The widely touted impediment of "resistance to change," in this regard, was not a psychological insecurity, but rather an occupational one. Educators and students alike were resistant to disruptions of their workflows because they worked in an organizational context that did not tolerate them. Once unfamiliarity with the technology ceased to impede or prolong accomplishment of the work to be accomplished using the technology, they largely ceased to be a problem, regardless of whether they were "better" or "worse" than the old ways of accomplishing their work. Because this "resistance" was typically

psychologized and located in individual educators ("divas"), educators were sometimes puzzled by student resistance to technological changes, falsely assuming that young people were "used to" such changes. A social and occupational perspective, however, reveals that this resistance is rooted in the work conditions of the school.

One emphasis of this study was to examine outcomes in educational technology not merely through the lens of pedagogy, but also through the lens of work. Occupational roles, expectations, and demands are enormously influential. They help to explain why Miguel—who sought a return on his investment but also seemed sincere in his desire to make his product a "win" for all involved, including teachers—could not see that Lessonr was an attack upon the institution of the school, and that his educational labor force desired more than a little extra income. They help to explain why Rita and Gretel became brokers and emotional laborers amidst the constant fears and strife over technologies at Catholic Academy—and why, despite favoring teacher autonomy to a large extent, they disagreed with complaints about disciplinary difficulties and desires to remain a "textbook teacher." They help to explain why administrators touted the educational benefits of technologies both at their schools and in general, even when the reality did not match the hype, or—as with Belinda, the principal at Catholic Academy—they privately espoused deep personal and professional objections to educational technologies. They also help to explain why Catholic Academy administrators continued to invest in technologies despite the school's severe financial problems, and why they were so concerned with the school's liability that might result from uses of technologies.

With teachers, attitudes toward educational technologies cannot be understood without attention to the precarious, besieged socioeconomic position of their profession. In a climate of "failing" K-12 schools and frequent political calls for external "accountability," teachers zealously guarded their pedagogical autonomy. They sought to characterize educational technologies as "tools" that could be "both good and bad" in their implementation, and which they were best positioned to deploy wisely. They were resentful of administrators and educational technology professionals who questioned this authority, and especially skeptical of entrepreneurs such as Miguel, who appeared only to want to "make a buck off [their] blood, sweat, and tears." Yet some—mostly those who had had positive experiences with digital technologies outside of the school—agreed with Rita and Gretel that educational technologies could be transformative, and aggressively adopted them into their classes. Educational technologies thus inspired a wide range of emotions and practices among teachers.

Finally, student attitudes toward educational technologies were strongly influenced by the conditions and constraints of their institutional position. Largely excluded from debates about how to use educational technologies in the ways that were "best" for them, they found many features of their everyday worlds baffling. They experienced uneven implementations, empty exercises, confusing practices, incomprehensible rules, and arbitrary enforcement—partly because the rationales of these conditions were hidden from them, and partly because some of these conditions were in fact ineffective or contradictory. They ascribed no inherent value to using technologies, at times confessing they were "sick" of using them. They were supportive of the autonomy

of teachers to teach in the ways that would produce the best educational outcomes, but also critical of their teachers' frequent tendency to fail to use technologies effectively: whether by complicating existing work processes by using technologies in a forced, clumsy, or cosmetic way ("overtechnologizing") or by compelling them to do work using non-digital means when a more efficient digital means was available ("undertechnologizing"). Ultimately, they were most concerned about retaining control over the ways by which they completed their schoolwork. The extent to which technologies were integrated into individual student workflows varied considerably, and, like teachers, they wished for fewer disruptions as new technologies constantly supplanted the existing technologies to which they had become accustomed.

Partially—but not entirely—overlapping with these varying social and occupational positions were several influential ideologies, discourses, and beliefs regarding the current conditions and most desirable future outcomes of adolescents, education, and digital technologies. These beliefs dominated participants' talk, were central to their professional goals and identities, and fueled much of the vitriol with which implementations of educational technologies were contested.

I have shown, for instance, how educational technologies are a new battleground upon which previously existing struggles in education—such as the competing efforts to more thoroughly commodify educational processes and to preserve education as a public good—are now fought. Miguel's aspirations for Lessonr offer a detailed glimpse into a vision of education in which the disaggregation of teachers into economic free agents purveying short instructional videos is a positive development, and educational

technologies will radically restructure education to render its content more suitable to profitization. His is an ideology which has already transformed universities (it is worth remembering that Miguel is a member of the board of directors at a college in his hometown) and which unsurprisingly views K-12 education as a new potential market ripe for disruption. In school and district administrators, sorely lacking in funds and sensitive to the branding of their schools, such entrepreneurs may find a sympathetic audience.

To contest capital's attempted institutional capture of K-12 education, educators must resist such intrusions. However, because they do not see their resistance in terms of deteriorating labor conditions, such resistance may appear stubborn and selfish. It is necessary, therefore, to articulate concerns about educational technologies in terms of pedagogy, or what is "best for the students." This transposition of occupational concerns into pedagogical concerns, I have argued, obscures more than it illuminates, and in fact discursively traps teachers in several ways. It encourages educators to keep an open mind—and even to welcome—entrepreneurs like Miguel who come proclaiming new pedagogical innovations, instead of immediately recognizing the threat to their interests. It casts aspersions upon even the most well-founded and egregious of educational laborers' complaints, since the ideologically pure educator should be more concerned with the well-being of the student than the self. And, because pedagogical objections are often founded in part or in whole in occupational objections that cannot be addressed directly, they are often perceived as weak or disingenuous, ascribed to the psychological insecurities of the "diva."

In order to contest commodifying uses of educational technologies that erode the status and autonomy of educators, educational technology professionals such as Rita and Gretel—along with some administrators and teachers—have embraced elaborate pedagogical theories. They must be able to convincingly claim, within the pedagogical frame in which these debates occur, why certain uses of educational technologies are not "best" for their students. They have done so, first, by aggressively adopting uses of educational technologies, so that no one can plausibly claim that they are "resistant to change," and second, by integrating their vision of educational technologies with an array of pedagogical theories, concepts, and trendy "buzzwords:" "brain-based learning," "student-centered teaching," "digital natives and immigrants," and teaching as the "guide on the side" rather than the "sage on the stage." Some of these concepts have scientific support, while others (such as the existence of "learning styles") are unsupported yet popular among educational practitioners.

In these theories, educators have constructed a legitimate means to resist uses of educational technologies that prioritize profits over learning outcomes. Like the discourse of the pedagogical "tool," it situates teaching as a difficult, complex endeavor, with skilled teachers best suited to making decisions about what is "best" for students. But this attempt at legitimation has limitations. While making space for teacher autonomy, it requires teachers to embrace aggressive uses of educational technologies and particular styles of teaching. In Rita's words, "I don't think technology should be used 'bell-to-bell,' but when it is being used, it should "change the classroom." It is, in short, an

intervention of a different sort: one that still makes demands and imposes upon teacher autonomy, and therefore one that is contested.

I have argued that such attempts to reshape pedagogy through elaborate theories and aggressive uses of educational technologies are resonant with the Foucauldian vision of neoliberalism, which emphasizes the reorganization of previously insulated domains of social activity (such as education) around the entrepreneurial and competitive behaviors valorized in economic spheres. Education, in other words, which was long thought to be protected from capitalist influences (though never entirely so), can no longer simply exist as a public good. This is a distressing development for many educators, who value "learning for the sake of learning," and neither wish to see education turned into a commodity, nor the value of their work assessed in strictly monetized terms. In order to protect education from entrepreneurs such as Miguel—i.e., agents of the sort of neoliberal project described by Marxian scholars—it must be refashioned according to a different neoliberal logic: one that does not turn it into an economic project, but which penetrates education with its economic tenets and practices nonetheless. These include what may be described as the "hyperrationalization" of pedagogy through theories cloaked in scientific and pseudoscientific terminology, the expectation that teachers should assume the burden of constantly reinventing themselves as technologically literate "guides on the side" in response to the changing socioeconomic context of their work, and ultimately the transformation of teachers into professional "entrepreneurs of the self."

The process of defending a more student-centered vision of education through brain- and technology-based theories is analogous, to some extent, of the ascendency of

"student affairs" at universities, which have increasingly diverted funds away from departments, professors, and students in order to finance corporate research partnerships, state-of-the-art facilities, and other expenses that do not improve teaching and learning (Washburn 2005). One could argue that the aim of student affairs employees at universities and educational technology professionals like Rita is to resist the prioritization of profits over the well-being of students. In order to accomplish this, however, they must construct more and more elaborate theories in order to legitimate this focus. This tactic of legitimation is likely not a conscious strategy, but rather an instinctive response by educators and other employees attempting to attract greater focus and funds to teaching and learning outcomes. Such legitimation was not necessary in the past, when education was perceived as a public good by its administrators, its value taken as self-evident. Since the profit motive in education seems to have triumphed over its value as a public good, however, a new source of legitimation (and resistance to corporate practices that erode learning outcomes) is found in the formulation and promulgation of these theories.

As these battles are fought by adults, the students bear the consequences. Like the adults, they do not have a full understanding of the socioeconomic stakes. But they are very much aware of how these struggles affect their everyday worlds, and very much attuned to the ways in which the educational system is not in fact oriented toward their "best interests." Their standpoint reveals the extent to which all involved in the educational technology complex have collapsed their own socioeconomic interests with the "best interests" of students. Amidst these competing interests that have differently

defined and prioritized the "value" of learning (e.g., market value, pedagogical value, value as a public good), students are significant not as actual agents or participants in the process of deciding how their own education should proceed, but as political pawns, an imagined group constructed in politically expedient ways to support particular arguments about what is "best" for them.

This is a degrading, oppressive condition for these young people who must endure extreme stress, boredom, and feelings of powerlessness as a result. At Catholic Academy, the workloads are heavy, and the expectations are high. They seek predictability and control over their workflow in order to meet these expectations, yet are confronted with a dizzying array of ill-defined, often contradictory, and often changing rules and parameters they must learn to navigate. At Public High, where workloads and expectations are more uneven, students experience crushing boredom as well as a sense that they are being left behind. They spoke with anger, at times quite poignantly, regarding the failure of their school to provide them with necessary technologies and the requisite skills to use them.

The marginalization of students also has implications in the struggle of educators to protect their interests from threats such as Miguel. Although views among teachers were varied and heterogeneous, as a group, they tended to be most adamant about constructing young people as elusive, deficient, and in desperate need of their professional guidance, putting down young people as a way to elevate their own socioeconomic value. But Miguel exploited this tendency by positioning himself as one who believes students and parents are capable of taking greater control over their

learning. In fact, his construction of youth was no less demeaning than teachers', as he often touted how his product addressed young people's needs by reaching for negative stereotypes, such as a desire to stay up late or not talk to their parents. But he was, in effect, able to position himself as an optimist in comparison to teachers, and thus appear more appealing.

Future Research and Implications

This exploratory project yielded an intriguing number of significant findings and permitted me to untangle the messy, complex webs of relations that influence outcomes in educational technology. It is important, however, to remain mindful of the limitations of this project. Catholic Academy and Public High both possessed unique characteristics and conditions that are not present at many U.S. high schools; it is thus difficult to determine the extent to which the particular dynamics upon which outcomes in educational technology were founded in these schools can be generalized to other U.S. high schools. Given the surprising dearth of sociological research in this area, assessing the generalizability of these findings is certainly an important task for future research.

Yet there is good reason to believe that many of these processes and practices are manifesting elsewhere. I have focused my analysis, in accordance with institutional ethnography, upon the ways by which "the local is penetrated with the extra- or translocal relations that are [themselves] generalized across particular settings" (Smith 2004:42). I would further contend that some of the unique phenomena that occurred during my data collection, such as Catholic Academy's attempted partnership with Lessonr, may very well become more commonplace in the future. I hope that this study will inspire a much

greater effort among sociologists to examine the fascinating and consequential struggles over educational technologies in schools.

As I stated in my methods chapter, however, I do not simply hope to advance scholarship in this area. I also hope, in Mills's (1959:187) words, to "translate personal troubles into public issues, and public issues into the terms of their human meaning for a variety of individuals." I therefore wish to conclude with some recommendations for policymakers, educators, and concerned parents and students. These recommendations are not merely relevant to educational technology, but the very viability of the educational enterprise itself.

First, as I have observed, the financial burden of provisioning schools with adequate hardware, software, and professional development is significant. Choosing to invest in a few expensive technologies to be showcased—rather than a more comprehensive adoption of less expensive or exciting technologies, as Public High's district has done—is thus doubly harmful to teachers and students: it consumes scarce funds that could be spent on more effective technologies, as well as important non-technological needs. The occupational pressures upon school and district administrators, however, encourage such superficial yet exciting investments in technologies. Stakeholders and members of school communities should be aware of this temptation, propose more prudent investments in educational technologies, and publicize the existence of such options. At all but the most affluent schools, the best use of scarce funds is an investment in inexpensive yet effective hardware and software, so that funds

remain available to meet the formidable needs of technical support and professional development.

An especially important need is to close the "digital divides" between economically disadvantaged students, such as those at Public High, and their more affluent counterparts at Catholic Academy. Students without access to digital technologies at home should have opportunities to complete required schoolwork using technologies at the school, so that lack of access is not a determinant of academic success. Economically disadvantaged students also urgently require remedial training in basic technological skills. Socioeconomic class, not age, is the greater predictor of technological skills and literacies. To assume that all members of the "digital generation" have already acquired necessary technological skills, therefore, is not only a false stereotype and an example of how the adolescence project fails to recognize the vast disparities of experiences that exist among young people. It also reproduces class inequalities, as schools wrongly presume that instruction in this area is not necessary, and as a result these unskilled students will remain at a disadvantage as they enter higher education or the job market.

It is difficult to find time to provide this instruction, particularly at a school like Public High, which already must cope with stringent standardized testing requirements. This difficulty could be perhaps be addressed by requiring students to pass a technological aptitude exam before graduation, with options for students who lack the necessary skills to attend workshops after school or during the summer. Perhaps an even better solution, which would avoid creating the burden of yet another test, is to create a

referral system that teachers can use to identify deficient students to support staff to provide remedial instruction. Summer may be an especially ideal time for economically disadvantaged students to learn necessary technological skills, due to the wide body of research implicating summer learning loss in the achievement gap between advantaged and disadvantaged students (e.g., Downey, von Hippel, and Hughes 2008).

Summer is also perhaps an ideal time to conduct professional development oriented at increasing teachers' technological skills. Optional development during the school year, of the sort offered in Public High's district, resulted in lackluster participation, while mandatory development during the school year, of the sort required at Catholic Academy, produced feelings of resentment. Most teachers are willing to experiment with new educational practices involving technologies. However, they do not wish to increase their workloads during the school year, to introduce delays and disruptions into their hectic workflows, and in some cases, need time to learn at a slower pace and a safe space in which to process their feelings of inadequacy. A required (or perhaps strongly encouraged, to mitigate teacher resentment) once-per-week summer session, with teachers grouped according to their current technological abilities, for example, would provide time and space for experimentation while minimizing the occupational and emotional strain of learning these new yet increasingly necessary professional skills. This type of weekly summer session was a model with which Rita had experienced success at Catholic Academy, providing additional support to a few of the more deficient teachers, such as Nicolette. Ideally, teachers should be compensated for this work—perhaps with a small stipend—to recognize their investment in better

professional skills, and to avoid creating the appearance that attending such sessions are a punitive measure or an advertisement of technological incompetence.

Professional development that seeks not only to introduce new skills but also to match teachers with the technological uses best suited to their subject and style of teaching is a worthy investment. Although professionals like Rita cannot alleviate all resistance, they are capable of successfully improving the skills of initially resistant teachers like Nicolette. The lack of such instructional support at Public High was notable and significant. Because of teachers' (well-founded) skepticism of external interventions and mandates, successful educational technology initiatives will require the presence of a specialist whom teachers trust and believe to have the same goals and interests that they do—a "guide on the side" to support them as they integrate technologies into their classrooms.

But the presence of sufficient educational technologies and the necessary support to implement them is not enough. Educators should stop playing games, tying themselves in discursive knots, and encourage more direct conversations among themselves about their working conditions. They should acknowledge their precarious socioeconomic position. They should recognize that the source of the emotional volatility around pedagogical autonomy and uses of educational technologies is rooted in occupational, rather than psychological, insecurities. They should admit that while they care deeply about the "best interests" of their students, they have their own interests too, and their concern for their students should not prevent them from defending their own interests. They should be aware of the ways in which their jobs shape their outlook regarding

young people, their desired vision of what education should be, and the role of educational technologies. At both schools, better communication among educators—especially between teachers and administrators, regarding the varying conditions, constraints, and needs they must confront in their work—could have averted many of the misunderstandings and conflicts described to me.

Above all, educators must recognize the threat that entrepreneurs such as Miguel pose to their shared vision of education as a public good. Even though this vision is under attack, K-12 education in the United States, in many places, still retains some aspects of this vision. Catholic Academy's educators could have acknowledged Miguel and Lessonr straightaway as a threat to their common interests, instead of "letting him in the door" in a misguided effort to be receptive to whatever is "best for the students." It was only when Miguel disparaged the school that Belinda, Rita, and the teachers rediscovered their common interests. But, in fact, Miguel's effort had been hostile to the interests of Catholic Academy educators all along. By encouraging more direct conversations about educators' common interests, instead of transposing disagreements and different interests into arguments over pedagogy, educators will be able to recognize such threats more quickly, and remain unified in their defense of a vision of education that prioritizes educators, students, and the public good over profits.

This does not mean, however, that schools should reject ties with all educational technology companies. There are many such companies, and it would be a mistake to presume that they are all concerned with profit over pedagogy. Even Miguel, if he is sincere in his desire to create a product that could be a "win" for all involved—as I

believe he was—may come to recognize the occupational implications of Lessonr for teachers, and direct his entrepreneurial capabilities in a different direction. The private sector is a space where entrepreneurs may operate in bad faith—but it is also a space where passionate former educators may find the freedom to create new, innovative uses of educational technology. Although a full assessment of the educational technology private sector is beyond the scope of this study—and a healthy skepticism on the part of schools and educators is recommended—readers should be careful not to conclude that all such entrepreneurial endeavors are opposed to the interests of teachers or students.

It is also imperative that educators do not forget that they must minister to their students as they really are, rather than the imagined and often convenient construction of students as they wish them to be. The temptation to demean the capabilities of students, or to construct them as obstacles or the unformed objects upon which their pedagogical "tools" work, is great. To the extent that teachers do in fact value the best interests of students, teachers and students should be allies. Students, too, have an interest in defending education from commodifying influences, and are largely supportive of teacher autonomy. Yet, without a stake in their own education, students are as likely to view teachers as their oppressors as their advocates.

Educators, rather than dismissing these student complaints as typically misguided adolescent angst, should take their discontents seriously. The adolescent project promotes a false, essentializing, and often demeaning understanding of who young people are, which at times leads oppressive consequences of the sort described in these data. Educators, who regularly come into contact with the diversity and capabilities of young

people, should be resisters, rather than defenders, of this project. To the extent that educators retain their autonomy, they have an opportunity to share some of this autonomy with young people. They have an opportunity to work with youths as collaborators and stakeholders in their own education.

Educators should seek out and respect the opinions and perspectives of their students, especially when these contradict their own ideas about who young people are and whom they should become. Young people are stakeholders in their own education, as well as the educational technology complex—and should be treated as such. While students will certainly benefit from the guidance of educators, educators should not presume that they have all the answers. Many student grievances, which adults might be tempted to dismiss out of hand, contain some truth in them. Foremost among them is the grievance that their everyday worlds are confusing, inconsistent, and for many extremely stressful and boring. Students should have instutitionalized means to articulate these concerns and participate collaboratively in implementing solutions.

In the classroom, educators should create more opportunities for young people to participate in their own education as agents, rather than pawns to elevate the socioeconomic standing of teachers. The logistics of the one-to-many classroom structure make this a challenging goal, but not an insurmountable one. Students would doubtlessly appreciate more autonomy with respect to how (i.e., using digital or non-digital means) their required coursework is completed. Teachers could recognize the diversity of work styles and the importance of such autonomy, letting students complete their work according to their preferences except in cases when learning a new way of completing the

work is one of the learning objectives. More autonomous activities, and more classroom activities in which the "guide on the side" teaching style is adopted should also be encouraged when the youths have demonstrated the ability to manage their work successfully. Finally, instead of mandating class policies, students could be brought into the process of creating the rules and expectations of their classes at the beginning of the school year, so that their desires and preferences are reflected to some extent in the structure of their classes.

Would such changes, in effect, reinforce the ascendant neoliberal governing rationality in schools, turning students ever more surely into "entrepreneurs of the self," providing them with endless choices while increasingly demanding greater and more flexible work from them? This is a sobering possibility, as one of the foremost reasons for neoliberalism's success, scholars have argued, is its ability to evolve and co-opt even those processes that are intended to resist it (Bockman 2012).

But this, I believe, is a risk worth taking. It is already apparent—in the stressful and competitive college application process I witnessed at Catholic Academy, for example—that students are already being made into "entrepreneurs of the self." It is better, in this context, for educators and students to participate in and hopefully steer this process in more productive directions, than to yield what influence they may have to other stakeholders who may have conflicting interests.

It is also better—even if it occurs in the context of an oppressive system—for educators and students to see one another as collaborators and allies, so that their combined influence may create the possibility of changing the oppressive conditions

under which they are laboring. As divided and fragmented as the various groups and stakeholders at Public High and Catholic Academy were, their cause in leveraging education and educational technologies toward the public good ultimately asserted itself. It is incumbent upon these various groups and stakeholders in the school—administrators, teachers, and students—to unite around this common cause in order to resist the commodification of education, and to truly serve the best interests of students.

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