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Digital Capitalism Today: IT Industry-Led Public Private Partnerships in a Northeastern School

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**DIGITAL CAPITALISM TODAY: IT INDUSTRY-LED PUBLIC PRIVATE
PARTNERSHIPS IN A NORTHEASTERN PUBLIC SCHOOL**

A Thesis Presented

by

PAIGE P. MUSTAIN

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
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ABSTRACT

DIGITAL CAPITALISM TODAY: IT INDUSTRY-LED PUBLIC PRIVATE PARTNERSHIPS IN A NORTHEASTERN PUBLIC SCHOOL

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There has been considerable zeal regarding the democratizing promises of information and communication technologies (ICTs). This belief has resulted in the proliferation of ICT development initiatives in education through public private partnerships. However, there are critical scholars who caution against an overly celebratory perspective of ICTs and expose the ways in which they may be contributing to the exacerbation of existing inequalities. This thesis was inspired by Dan Schiller's book, *Digital Capitalism* (1999) with the purpose of examining how digital capitalism is evident today.

'Digital capitalism' refers to the relationship between politics, economics, and technology that explains the shift in the use of the Internet from aiding government agencies to serving private commercial interests. Through a political economy of communication approach, this thesis examines a new model of public schools in which IT companies are partnering with various cities and districts to equip students with the 21st century skills needed to participate in the labor market. These partnerships are designed to benefit marginalized youth that do not have access to ICTs so the study looks

at one of these schools encompassing this new innovative model in order to examine the benefits and limitations of these partnerships

The purpose of this thesis is to examine the way digital capitalism is playing out in education today in order to shed light on the political and economic forces driving these initiatives while examining who the decision makers are as well as who benefits and why. It has a dual objective of contributing to current digital inequality scholarship and informing policy-making. This thesis ultimately argues that there is a need for more targeted and individualized policies that serve each district's unique needs, which works to fulfill the policy objective. It challenges the notion that technology is a neutral artifact that is separate from broader political, social, and economic processes.

KEYWORDS: digital capitalism, political economy, public-private partnership, education, technology, inequality, neoliberalism.

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ABBREVIATIONS

CAI	Computer Assisted Instruction
CSR	Corporate Social Responsibility
DOE	Department of Education
EMO	Education Management Organization
ICT	Information and Communication Technology
IT	Information Technology
NCES	National Center for Education Statistics
NCLB	No Child Left Behind
OECD	Organisation for Economic Co-operation and Development
PiL	Partners in Learning
PPP	Public Private Partnership
RTTT	Race to the Top
STEM	Science Technology Engineering and Mathematics
TNC	Transnational Corporation

CHAPTER 1

INTRODUCTION

In his 2013 State of the Union Address, President Obama touted Brooklyn’s “Pathways in Technology Early College High School” (P-TECH) as an exemplar model for schools that will successfully equip its students with the 21st century skills needed for today’s labor market. P-TECH is an innovative high school in Brooklyn, New York that allows its students to earn an associates degree in Computer Information Systems or Electromechanical Engineering while still in high school (Chapman, 2013). What is significant is that P-TECH is the result of an innovative collaborative public private partnership between IBM, the New York Department of Education, and the City University of New York (CUNY). According to the student profile information, more than 60% of the students are Black or Hispanic with 80% of the total student population qualifying for free or reduced lunches (Pathways in Technology Early College High School, 2013). The overall objective of this model, according to New York governor, Andrew Cuomo, is to link these students directly to jobs, – who before coming to P-TECH were low performing students and from underserved communities. The governor argued that this link was good for students and businesses, and furthermore, “These public-private partnerships [embodied] a model for success for our students, our employers and our regional economies” (Cavanagh, 2013). Such models thus represent the continuing rise of using information and communication technologies (ICTs) as tools for social and economic equality and prosperity. It further exemplifies the greater

political-economic forces continuing to shape cultural values and the restructuring of social institutions such as education.

P-TECH is not the first school encompassing a public private partnership between education and the technology industry but its structure represents dominant social patterns that work to reify and perpetuate neoliberal hegemony through the extension of market logic in education. This warrants a closer examination specifically looking at the role of technology, the state, and private sector, which will illuminate the forces driving these relationships, their impact on students, and the overall education system. By gaining an understanding of these innovative IT industry-led education PPPs, their broader implications in terms of social structures will be exposed. For instance, these partnerships signify the free market expansion in schools, which inculcates students and educators with an acceptance of capitalism. This enhancement of the role of private investors in schools further maintains the relationship between education and economic competitiveness in an increasingly segmented IT job market. The need to expound upon these ideas provides the motivation for the research questions driving this study.

Research Questions and Purpose of this Study

While private companies have had their hands in education for a few decades, there has been a proliferation of these innovative collaborative school models entailing IT industry match-ups with public schools across the country. These models are making the private sector's role in public education much more salient and signify a deeper entrenchment of the private sector in education. As such, various claims are being made about the motives of these partnerships, whether it is to provide access, ensure that the next generation is being primed with proper 21st century skills, ignite innovation, and/or

expand the IT market, etc. Regardless, it all falls under the pervasive utopian perspective towards technology being an all-encompassing equalizer. Dan Schiller, along with several other notable scholars (McChesney, 2013; Mosco, 2009; Streeter, 2010; Hindman 2008), encourages a more skeptical perspective towards ICTs and promotes a critical look at their structure and their influences on society. Aligning with the critical perspectives, arguments about private public partnerships (PPPs) have generally been focused on questioning the incentive structure and how private sector involvement in the public sector has been seen as a way to reinforce asymmetric power relations.

In support of this deeper examination of the relationship between society and ICTs, Schiller espouses, “the arrival of digital capitalism has involved radical social, as well as technological, changes” (Schiller, xiv, 1999). Digital capitalism, according to Schiller, is used to describe the merging and strengthening of corporate relations through the commodification of information, which is driven by power. He states that digital capitalism represents the shift in cyberspace from being created and used by the military-industrial-university complex, where the government-funded project ARPANET was created for strategic military communication purposes by both government agencies and universities, to the mainly commercial use serving corporate users that we have today (Schiller, 1999).

Parallel to this idea of digital capitalism, but rather used to characterize the direction education is headed, is the concept education-industrial complex, which is understood as “networks of ideological technophile, and for-profit entities that seek to promote their beliefs, products, and services in furtherance of their own goals and objectives” (Picciano and Spring, 2014).

These concepts, digital capitalism and education-industrial complex, drive the central research question for this thesis which is, how is digital capitalism evident with the PPPs between FutureTech and the IT industry? This thesis adopts a case study approach by looking at a combined middle and high school in the Northeast called FutureTech¹. This school represents a new model in which innovative collaborations between IT industry leaders and public schools aim to serve underserved youth. Through this case study, I seek to understand how these partnerships are influencing or transforming the curriculum and structure of education. Furthermore, through in-depth interviews with FutureTech's teachers, administrators, and a technology coordinator, this study looks at the internal structure of these partnerships. This data is then used to examine the governance of PPPs in order to see how neoliberal objectives such as privatization may or may not be undermining democracy in education through IT industry-led public private partnerships. Democracy here is evaluated in terms of how much say the public stakeholders who support public education (students, educators, parents, community members) have with regards to school board membership and the decision-making power of those elected as board members.

The motivation behind this study is to gain a deeper understanding of the larger political, economic, and social processes that are driving these relationships and what the implications might be for traditionally underserved youth. Additionally, it is my hope that the findings from this study can help inform policy-makers to create policies that produce and maximize long-term benefits for these students. Toward this end, I look at all of the available annual reports from the Department of Education (DOE) that details the

¹ The name of the school has been changed in order to protect the identities of the employees and students.

FutureTech's academic indicators such as standardized test scores, drop-out rates, plans after graduation data, and overall report card comparing these statistics to comparable schools as well as district and state averages. This data collected through archival research methods will be used to answer the second question driving this research, which is: what are the benefits and limitations or impacts of this model in terms of educational achievement, signs of closing the achievement gap, and life prospects?

Significance of this Study

This research is significant because it presents indispensable facts about the role of the private sector in the public sphere, their larger cultural and ideological influences, and the limitations of how ICTs are addressing social inequalities. This information can be used to extend current scholarship on this area and help inform policy makers by highlighting the positive outcomes as well as the shortcomings of these existing initiatives. In order to further exemplify this study's significance, the following questions need to be addressed.

- Why study IT industry-led public private partnerships in the context of education?
- Why primary and secondary education as opposed to higher education?
- Why study information and communication technologies and social inequalities?
- How is this study influenced by policy discourse pertaining at the intersection of ICT and social inclusion?

Why Look at Public Private Partnerships in an Educational Setting?

For over a decade now, the rise in public private partnerships in education has been founded on the assumption that if schools were run more like businesses competing in the market, the achievement gap bifurcating poor, underserved students from middle-class students would close. If schools turn to business models then education is no longer

following the model of a public good; it is now that of private market. The way public good is understood here is that the goal is to benefit the society. It is not the point to educate students simply because it is good for the economy, traditionally, it has been the case that students are being educated because it is good for society and an informed citizenry promotes democracy. The threat to democracy in this context might be how private partners are exercising top-down control over implementation of technological integration and curriculum development that works to weaken the voices of students, parents, educators and citizens in order to serve private interests rather than the public good.

Most of the literature available focuses on how to improve the low-income students' performance rather than considering the larger underlying issues, such as resource allocation or large class sizes, that are inherent in the structure of the social system. The issue of class is of importance here also because these partnerships are set up in both an opportunity and deficit context where the private sector distributes resources that enhance performance and quality of education for underserved and underachieving schools. The "target group" for these development initiatives has historically been and continues to be school districts with a high concentration of low-income students.

Pertaining to the question of motivation, market logic suggests that it would be more profitable to focus on and seek partnerships with wealthier schools and wealthier school districts where the students are more likely to have the resources to invest in their products. Most of the research that has been done concentrates on secondary education (Schiller, 1999; Taub & Schiller, 2001; Mosco, 2001; Oppenheimer, 2003; Robertson, et

al., 2012). This research is highly relevant and lends substantial evidence to help us gain an understanding of the role of technology industry in the restructuring of education.

In sum, education is understood as a public good that is characterized as being publicly owned, funded, and operated. The integration of the private sector challenges this understanding and has broader implications for society, thus making it highly significant to study. There are many points of contention when it comes to public private partnerships and education that may be ideological or pragmatic but perhaps the most prevalent or widely discussed is that of educational objectives. Educational objectives as a point of contention is acknowledged in terms of a clash of interests when those of the private sector are at odds with the purpose of public education. For these reasons, education presents itself as a significant space for analysis.

Why primary and secondary education as opposed to higher education?

The decision to make K-12 education the focus of this study over higher education was purposive, stemming from a few key reasons. One of these reasons is simply that after reviewing the literature there seemed to be overwhelming attention drawn towards the influences of private sector and ICTs in higher education so I saw this as an opportunity to help fill the gap in research related to this topic on primary and secondary education. Another reason K-12 was selected over higher education was because this is where these new models are being created. Additionally, the public education system is a particularly sensitive site because access to it is considered a basic right and is suppose to represent the democratic ideals of the country, which privileges the public voice. Therefore, the growing concerns that the public voice is being

threatened by increased private sector involvement makes it a critical site of analysis for the issues being explored.

Perhaps most importantly, K-12 education was chosen over higher education because the age groups involved are considered the formative developmental years, which makes the impact of the private sector-driven ICT centered education model most salient. The students in this generation are considered digital natives, born in a time when ubiquitous access to ICTs and mastery of the so-called 21st century schools directly influence one's life-prospects in terms of participation in the labor market. By looking at after-high school plans from the DOE data collected in conjunction with this study's interview data, I will be able to further assess the benefits and limitations of these partnerships and the relationship between ICTs and social inequality.

Why study information and communication technologies and social inequalities?

Information and communication technologies are increasingly being recognized as public goods. The diffusion of ICTs has been incredibly uneven but this is no coincidence. The diffusion patterns of ICTs, where the most well-off are the first to adopt thus further solidifying their privileged positions while those who are already underserved are last to adopt and thus deepening their disadvantaged positions, reflects underlying political, economic, and social issues at play. It is widely understood that ICTs directly influence economic and political growth. Without access and development of technological skills, underserved groups will be further disadvantaged by being barred from the political, economic, and social opportunities afforded by ICTs. For instance, in the context of ICTs for development, Jan Servaes (2008) argues,

Having access to the digital highways helps improve access to education opportunities, increase transparency and efficiency in government

services, enhance direct participation from the ‘the-used-to-be-silent-public’ in the democratic process, increase trade and marketing opportunities, enhance community empowerment by giving voice to voiceless groups... (p. 206).

This statement exemplifies the significance of examining the relationship between ICTs and social inequality.

How is this study influenced by policy discourse occurring at the intersection of ICT and social inclusion?

This section of the significance aspect acts as an extension to the previous section on technology and inequalities but with more of a social policy focus. The motivation behind this thesis came from a growing curiosity to understand what types of challenges those without adequate access to technology faced in an increasingly technology-dominated world. This stemmed from engaging with the growing body of scholarship surrounding the democratizing effects of ICTs (Ferdinand, 2000; Benkler, 2006; Jenkins, 2006) and wondering if it was equally democratizing for all. After reading this study’s literature review, it should become clear to the reader that ICTs are more likely to reflect social problems as opposed to transcending them.

Although the theme of social inclusion/exclusion has roots in the social functionalist social theory of Emile Durkheim it did not gain prominence in policy and sociological scholarship discourse until the 1970s. It has since been widely adopted by development scholars as a way of approaching issues of poverty. To be sure, the concept is much broader than its concern with poverty but this has been the most apparent in the available scholarship. The concepts of social inclusion and exclusion have a considerable presence in European discourse (Warschauer, 2003, p. 8). Social inclusion is understood as:

The extent that individuals, families, and communities are able to fully participate in society and control their own destinies, taking into account a variety of factors related to economic resources, employment, health, education, housing, recreation, culture, and civic engagement (Warschauer, 2003, p.8).

This thesis is heavily influenced by Warschauer's 2003 book, *Technology and Social Inclusion: Rethinking the Digital Divide*, which is interested in the intersections of ICT and social inclusion. He endorses a social inclusion framework as opposed to the problematic, over-simplified, digital divide framework that he believes has masked the underlying social systems and processes that are responsible for deepening social inequalities.

In line with the underlying argument made throughout this thesis, Warschauer (2003) states,

ICT does not exist as an external variable to be injected from the outside to bring about certain results. Rather, it is woven in a complex manner into social systems and processes. And, from a policy standpoint, the goal of using ICT with marginalized groups is not to overcome a digital divide but rather to further a process of social inclusion (p.8).

It is no coincidence that those excluded from networks or adequate technological resources are those that are already marginalized. This includes people of low-socioeconomic status, people with disabilities, lower educational attainment, and those living in rural areas (where property is much more affordable than in urban spaces). This alone should indicate the limitations of believing ICTs would alleviate social inequities.

As will be made evident throughout this study, the issue is much more complex. This is not to say that technology does not have the potential to empower and promote political engagement or enable one to acquire technological skills that gives them the opportunity to secure an IT related job because it can do all of these things but it is

problematic to assume that technology alone is the answer and masking the structural processes responsible for existing inequalities. These need to be addressed and overcome before the promises of technology can be realized.

Beyond being a matter of a sufficient share of resources, social inclusion entails “participation in the determination of both individual and collective life chances” (Stewart, 2000, cited in Warschauer, 2003, p.8). This is directly relevant to this study because one of the foundational premises upon which models such as FutureTech are being developed is that by having a technology driven curriculum and focus, these schools will improve life prospects for traditionally underserved groups. The second question of this study that asks, “what are the signs and perceptions of the benefits and limitations of this innovative collaborative model where IT industry partners are involved from the school’s inception throughout its growth?” engages with these claims and seeks to understand if this is being actualized at FutureTech.

Warschauer concludes with a note to researchers interested in technology and social structures:

As researchers of ICT and its social context, we may sometimes tally up computers and Internet accounts; however, this is not an end in itself but rather part of a broader effort to better understand the process of technology use and the role of ICT in human and social development. Similarly, as social advocates, we may work to distribute computer equipment, but again as a one step toward a larger purpose of helping people participate fully in the information economy and network society (2003, p.216).

This, essentially, is the motivation, argument, and purpose of this thesis. Warschauer is arguing, those interested in digital inequalities need to adopt a broader perspective and understand that the relationship between society and technology is multifaceted and complex. Essentially he is arguing that we must be aware and take into account the

complexities involved in order to make a sustainable change. Before delving into these ideas further, some context needs to be provided. So, what follows is the profile of the case study, FutureTech.

Case Study Profile: FutureTech

The Northeast is the birthplace of public education in the United States. While there has been extensive research on development initiatives set up through PPPs involving the IT industry and public schools in places in the western region of the U.S. such as Silicon Valley and the Midwest in cities like Chicago, there is a dearth of research on this topic in the Northeast and relatively no research on this innovative model where the private sector is involved from these schools' inception. This region presents itself as an ideal site to research the PPP relationships between the IT industry and public education and to explore how digital capitalism exists today.

Aside from its physical proximity to myself as the researcher, there are many reasons why the Northeast is an interesting and ideal site. This region is known for being a technology hub and the epicenter for higher education. The Northeast has the highest concentration of colleges and universities in the country and is home to six of the eight Ivy League colleges as well as the Massachusetts Institute of Technology (MIT). MIT was founded in response to the industrialization of the United States and its early emphasis was on applied technology leading to close cooperation with industry (Roberts and Eesley, 2009). Further, as of 2009, "more than 38% of the software, biotech, and electronics companies founded by MIT graduates are located in Massachusetts" (Roberts and Eesley, 2009, p.8). Additionally, the Northeast is home to the several of the largest technology company research centers, which include, Google Inc., Microsoft, and

Amazon. With this region being a technology and an education center creates the perfect environment in which to study public private partnerships in education.

Recently, there has been pressure placed on public schools to seek more partnerships with the private sector IT industry. As such, there have been a lot of developments in this area regarding PPPs and new initiatives. In a recent press release (2013), Boston's Mayor Menino announced a new partnership between BoomWriter Media, Inc. and Boston public schools. BoomWriter Media, Inc. is an education technology company that is focused on collaborative storytelling and book publishing. Through this new partnership came the BoomWriter Technology Heroes Program. The program is a web-based literacy initiative that helps teachers master technological skills for the classroom. According to the BoomWriter website, the objective is to teach children digital storytelling skills through collaborative projects in the classroom. For the first time, this past February, Boston public schools and the Commonwealth celebrated a digital learning month, which is a part of a nation-wide campaign to get schools to adopt more digital learning practices. Boston Public Schools will introduce the Technology Heroes Program within the district to celebrate creative writing and engage digital learners with this innovative platform. Melissa Dodd, the Chief Information Officer of the Boston Public Schools spoke about the partnership, "This is an exciting partnership that not only enables educational innovation in the 21st century, but aligns with the district's goal to prepare our students for college and career success" (BoomWriter Media, 2013).

Other cities in the Northeast are following suit with several partnerships including Cisco where Cisco and K-12 schools are adopting a scalable network through Cisco's

Networking Academy, which is a multi-modal content platform designed as an IT workforce development program preparing K-12 students for IT jobs (Cisco Networking Academy, 2014). There are various platforms and designs for these partnerships but they are underlined with the same philosophy that technology will alleviate inequities and the professionals know best. Significantly, Cisco is one of FutureTech's major partners.

There has been a proliferation of these partnerships and initiatives among public schools in the Northeast just in the past couple of years. In addition to the BoomWriter Media partnership is the Turner Broadcasting partnership that helps students learn various broadcasting and communications industry skills to prepare students for that field. Finally, in another recent *Boston Globe* article from June of this year, there was an announcement about how the leading tech companies were urging Massachusetts to create mandatory computer classes in order to prepare the next generation with proper skills to land jobs with their companies, which they argue, would lessen the dependence on foreign hiring (Farrell, 2013). With the rise in these partnerships and pressure being applied by industry leaders further supports why the Northeast is an ideal location to conduct further research.

Background and Context of FutureTech

FutureTech, created in 2002, is a public school that is very similar to Brooklyn's P-TECH in that its development came out of a public private partnership between the state and technology industry leaders with the main purpose of providing its students with the skills necessary to compete in the 21st century economy. Its curriculum is centered on the use of technology. This school was used in a prominent national budget proposal to

highlight the importance of investing in ICT development initiatives and getting the private sector more involved in public education.

FutureTech is part of a development initiative that evolved out of a grant given by the Bill and Melinda Gates Foundation. It was designed for students with low academic achievement records; a majority of the entering students are at least a grade level behind. Eighty-six percent of Future Tech Academy students qualify for free and reduced lunch and 89% and are either black or Hispanic with both of these percentages being higher than the district averages (National Center for Education Statistics, 2011). The current data indicates that Future Tech Academy has an 83% graduation rate with 94% of its students going on to two- or four-year college or university, which is again, higher than the district's average (National Center for Education Statistics, 2011). This data is significant and in need of deeper examination because, at a surface level, it seems to support a technological determinist view that technology is a great equalizer, which may be used to perpetuate existing policy oversights in education reform initiatives such as investing money into technology without considering the structural issues at play.

As outlined above, the mission of FutureTech is to use technology as a bridge for their students, who are primarily underserved, from low-income families, to obtain the necessary technological skills to become college ready and compete in the labor market. The demographics of these schools where such initiatives and partnerships have emerged are important to this study because it seeks to gain an understanding of what it is about the social system in which these institutions operate that traditionally provides an abundance of opportunities for some and constraints for others. The strategies for

fulfilling their mission to prepare students for college and to compete in the labor market are designed by the school's headmaster and their private partners.

FutureTech's Partners

FutureTech has various community and private business partners that play different roles in the school but it is mainly in the form of donations. This section will provide a very brief overview of the partners and their roles according to FutureTech's website. This will be discussed in great detail in the analysis chapters.

The main contributor, at least for its origins, is the Gates Foundation. The Gates Foundation was responsible for the initial sum of money to get the school started and for sponsoring professional development workshops for the school's educators. Cisco is another partner that supplies the wireless infrastructure for each classroom and provides training for the teaching staff through Cisco Networking Academy. Additionally, IBM, Lenovo, HP and SMART Technologies all provide technological hardware. As the analysis chapters will demonstrate, some of these claims are no longer relevant to the current context of the school. Nonetheless, this information is pertinent to understanding the ideological underpinnings of these partnerships and how its mission connects to the expansion of innovative education strategies taking hold throughout the U.S. education system.

The background information provided in this section came from various sources. In an effort to protect the participants of this study, pseudonyms have been used and in some cases, the parent sites of certain sources are referenced.

Thesis Layout

The core argument of this study is that technology is not a neutral artifact, separate from the economic and political systems in which it is developed, distributed and used. Therefore, this study endorses the argument espoused by scholars from the critical schools of thought that existing social inequalities are not alleviated or deepened by technology but rather, this is a function of the social systems they operate in. This thesis attempts to examine the contours of social inequality and its relationship to ICTs by looking at the phenomenon of IT industry-led education reform initiatives resulting in this FutureTech model. The reason behind this is because it is a site where all of the overarching issues serving as the motivation and focus of this research (technology, power, and inequality) intersect and can be examined.

In order to contextualize the study within relevant scholarship debates and approaches to understanding the current phenomenon being studied here, Chapter Two presents an in-depth overview of the available and pertinent literature followed by a detailed description of the study's methodological approach. The literature review is broken down into four major sections: 1) technology and social inclusion 2) education and technology 3) public private partnerships in education, and concluding with the study's theoretical framework 4) political economy of communication and digital capitalism. Because this study adopts a political economy of communication approach to studying this phenomenon and one of the hallmarks of this approach is the emphasis it places on historical processes in order to understand contemporary contexts, each section begins by reviewing its historical development. By reviewing the historical development of these relationships I hope to offer more understanding about the contemporary setting

of the private sector's role in public education and provide a context for this study's research questions.

Following the literature review is a detailed description of the study's research methodology. This section gives an overview of the overall research design and provides the rationale behind choosing these methods and techniques and further detailing why they are most appropriate for answering the study's research questions. This section also includes an explanation of the data collection and analysis procedures. Issues related to credibility and research ethics are also addressed. The chapter concludes by outlining the limitations of qualitative research methods and case study designs specifically and how these were mitigated for this study.

In Chapter Three, the study's central research question, how is digital capitalism evident at FutureTech is addressed. This chapter is organized first by an overview of the characteristics of digital capitalism. These characteristics are then problematized against the study's guiding research question in order to outline the ways that digital capitalism is evident at FutureTech through the three major categories that were both predetermined based on the characteristics outlined in Dan Schiller's (1999) *Digital Capitalism* and further supported when analyzing the data. Each major category, vocationalism, privatization, and techno-venture philanthropy, is first defined and how each is significant to the study is outlined. Each category includes several subcategories used to organize the findings from the interview and document data that illustrate the specific ways in which digital capitalism is playing out at FutureTech. Following the definition, significance and findings of the main categories, the chapter moves on to addressing how

they are interrelated and what the larger political, economic, and cultural implications are.

As previously stated, this study has a dual objective of adding theoretical relevancy to issues of technology and social inclusion as well as an applied component that seeks to help inform and guide policy-makers in creating sustainable and successful policies by illuminating oversights and patterns at FutureTech that are rendering these initiatives, at minimum, ineffective, and at worse, harmful to those intended to benefit from them. Chapter Four is primarily focused on the latter, functional or applied objective of this study.

This chapter presents findings from all data sources to answer the second guiding research question of this study: what are the benefits and limitations of these partnerships and structure of FutureTech's innovative model? This chapter presents the claims being made from a series of interview questions, related news articles, and FutureTech's IT partner websites. An overview of how this data was converged through cross-analysis techniques and what came out of it is provided and then presented against the archival data collected from the DOE. This chapter then covers the several paradoxes that arose and the findings that resulted from further investigation in the form of follow-up interviews to paint an accurate picture of what the real benefits and limitations of this model are in terms of student achievement, life prospects, and development of 21st century skills. The chapter offers suggestions for further questions that need to be answered and suggestions on what is needed in order for this FutureTech model to be able to achieve its stakeholders' objectives.

Finally, Chapter Five, the concluding chapter, will present a summary of the study's findings and their implications. In this chapter, I argue that these initiatives are not self-contained but rather part of larger social, economic, and political processes, which directly influences who has power, who benefits, and how these are working to further the neoliberal agenda. In this chapter, I also argue that there is a serious need for more focus on creating sustainable policies with targeted and individualized goals for each school participating in these initiatives. Additionally, it will outline the contributions this study can make in terms of policy, practice, and future research. Finally, the thesis will conclude with a summary of the broader significance and theoretical relevance of this project.

CHAPTER 2

LITERATURE REVIEW AND METHODOLOGY

As noted earlier, public private partnerships in education is not a new phenomenon nor is the relationship between education and technology. However, there has been a rise in a new form of PPPs in education where the private sector, particularly IT giants, has the power to shape and restructure public education. This is the type of PPP that will be studied at FutureTech. In order to understand what is driving and shaping the current context of these relationships we need to look at the historical development. The last section reviews the critical and political economy scholarship that provides the basis for the analytical framework for this study on IT industry-led ePPPs.

Education and Technology

This section will review the scholarship on education and technology industry through a historical approach in order to contextualize the contemporary setting. Education and technology has a colorful and extensive relationship. If we were to adopt the most basic definition of technology being the making of tools in order to effectively achieve a goal or solve a problem, then technology has been a part of education since the inception of public schooling, with writing utensils being considered technology. However, for the sake of its relevance to this study, technology will refer to the recent digital information technologies such as computers, SmartBoards, and the Internet, as well as the analog technologies, such as televisions, which preceded it.

History of Technology in the Classroom

Technology in the classroom existed long before the emergence of the Internet. In the early 1950s, the primary use of technology in the classroom was television (Oppenheimer, 2003). Nineteen sixty-five was the first year that computers began their integration into schools. At this point in time, it was mainframes and microcomputers that were being incorporated, mostly for administration and counseling purposes (Oppenheimer, 2003). The computers used during the 1960s were understood as support mechanisms, referred to as “computer-assisted instruction” (CAI) that assisted students with learning skills (Schifter, 2008). Minnesota was the first state to organize a campaign for computers in schools in 1973. They formed the Minnesota Educational Computing Consortium (MECC), which was a cooperative of state agencies and Minnesota colleges and universities (Oppenheimer 2003, p.9). This nurtured the emergence of educational software.

Seymour Papert, a professor at MIT, is often credited as the first to realize the potential of technology in the classroom (Oppenheimer, 2003; Schifter, 2008). Papert, along with Piaget in the 1960s, created the first educational programming language called Logo (Oppenheimer, 2003). Another popular educational programming software was Beginner’s All-Purpose Symbolic Interaction Code (BASIC), which was created in 1963 specifically for educational purposes but was not widely adopted until the 1970s (Oppenheimer, 2003). Personal computers arrived in the mid-1970s with Altair 8800 shifting the structure of educational institutions. Before this, schools were dependent on government-owned mainframe computers, but the availability of personal computers allowed for the opening of a new market specializing in educational software and

technologies. This shift and opening of new markets enabled the proliferation of public private partnerships between schools and IT industry leaders.

It is no secret now that education is seen as an investment opportunity for private corporations. Apple began donating their Apple I computers to schools in 1975 but they weren't immediately accepted for integration. The main concern from then and through the 1980s was how to use computers, which paved the way for commercial software manufacturers to enter into the education sector (Oppenheimer, 2003). In 1984, software manufacturers began developing and marketing computer-based tutorials and learning games for schools. Apple II computers were developed and began achieving widespread acceptance into schools while Apple developed learning games and tutorials to incorporate in the schools (Oppenheimer, 2003). Then in the early 1990s, textbook companies began manufacturing software to accompany the textbooks being distributed in schools. By 1995, schools began to rewire to provide the infrastructure for Internet access (Schifter, 2008). The uneven distribution of the Internet has given rise to the concern of exacerbating social inequalities, leaving under-resourced communities in what the literature describes as the digital inequalities (Hargittai, 2002; Hargittai & Hinnant, 2008).

Apple's early move into the education sector allowed for the Apple Classrooms of Tomorrow (ACOT) research project to emerge. ACOT was a longitudinal qualitative research study that took place from 1985 to 1995. It linked public schools, universities, research agencies, and Apple Inc. ACOT views technology as a necessary and catalytic part of the effort that is required to fundamentally restructure America's education system. Apple supplied five public schools with computers and various technologies in

their classrooms and the students' homes. The objective was to study how computers would alter teaching environments and students' learning behaviors (Sandholtz, et al., 1995, p.2). Data was collected through fieldnotes and audio-recorded journal entries by teachers, which were then transcribed and analyzed by the research team (Sandholtz et al., 1995, p.3). The findings suggested that the introduction of computer technologies into classrooms could significantly increase learning opportunities including "collaboration, information access, and the expression and representation of students' thoughts" (Sandholtz et al., 1995, p.24). Studies like this can be problematic because of the potential for skewed data based on conflicts of interest between the public and private sectors.

In support of the claim about conflicts of interest deriving from the entanglement of the public and private sectors is the Federal government's first nation-wide campaign to computerize the classroom, implemented by the Clinton administration. The initiative was called "The Kickstart Initiative" and it began in 1995. Describing the initiative, Oppenheimer states, "The Kickstart Initiative was bolstered by yet another report, from a presidential technology task force composed of thirty-six leaders of industry, education, and assorted interest groups" (Oppenheimer, 2003, p.50). The report produced questionable data that proved computers significantly enhanced student achievement. The data was suspicious and it turns out that the task force was made up completely of technology enthusiasts and in fact, "two-thirds of them worked in the high-tech and entertainment industries" (Oppenheimer, 2003, p.51). This is also problematic because these studies have been influential in policy-making decisions and technology-led education reform initiatives.

Technology-led Reform Initiatives

Saturation of technology in the classroom has been said to signify a warning of fundamental decay of educational breakdown (Oppenheimer, 2003). Recently, as demonstrated through various educational reform policies and the amount of investments made in education technology, there is this trend in thought that the Internet is education's long-awaited savior. As made apparent by the historical overview, the Internet is not the first technological advancement to play this role in education, but technology-led reform initiatives and policies proliferated with the advent of ICTs.

In the late-1950s, the National Defense of Education Act was enacted, bringing more money to schools. The money allocated for this act was to be directed towards technology. The act was influenced by the launch of Sputnik by the Soviet Union, which threatened the idea that the U.S. schools are superior to all other countries (Schwegler, 1982). In 1963, the Vocational Education Act was passed, which meant more money for supporting technology in schools (Schifter, 2008). Next, the Elementary and Secondary Education Act came and was designed to be a "war on poverty" intended to ensure equal access to high-quality education for underserved students. The act was amended in 2002 as the No Child Left Behind Act, which has provided a significant amount of funding for technological resources in primary and secondary schools (No Child Left Behind, 2010). E-Rate is another technology-led education reform initiative that was authorized under the Telecommunications Act of 1996. The E-Rate program provides discounts on affordable telecommunications and Internet access to schools with a concentration of high levels of poverty (E-RATE Program, 2013). All of these initiatives are based on the belief that technology enhances education and is the remedy for all educational

inequities. This fosters a growing dependence on technology companies, which have taken full advantage of this widely held belief by further entrenching themselves in the education sector. It has become widely known that education is a thriving market for business and this is supported by the recent proliferation of education technology startups.

Ed Tech. Startups: The New dot com Bubble?

According to CB insights, a venture capital database, in 2012 the education technology sector took in 1.1 billion dollars worth of investments (Heussner, 2013). Increased anxiety over the incentive structure and rise of IT industry-led education public private partnerships (ePPPs) is demonstrated through the recent identification of such partnerships as the “ed.-tech bubble” (Heussner, 2013). Parallels are being drawn between the 1999 dot com bubble and the rise in ed. tech companies, with a concern that the enthusiasm for education technology is leading to over-inflation in the ed. tech sector which might ultimately cause the bubble to burst (Catalano, 2012). This is a sign that profiteers are investing in ed. tech startups because they are aware of the shift toward private sector involvement in education. Others argue that it is too soon to tell because there is still a relative monopoly in the ed. tech market but most agree that this is beginning to resemble that of the dot com bubble. The implication that this has for ePPPs is that there will be many more firms in the game because of the potential for profit, which suggests even more private involvement in education.

The proliferation of these ed. tech startups also signifies the growing dependence of the education sector on private for-profit companies:

Education leaders and policy makers nationwide are embracing the need to restructure the public education system in order to improve student

performance, and many businesses are looking for ways to assist in this transformation (Sandholtz, et. al.1992, p.2).

The tantalizingly large size of the K-12 market cannot be understated. The education sector in the U.S. represents about 9% of the U.S. GDP (Simon, 2012). The growing presence of education technology companies in public education has caused heightened anxiety among education scholars. Diane Ravitch, an education historian and professor of education at New York University, acts as an education watchdog. Ravitch warns us about the consequences of such deep intermingling of public education and the private sector. She argues that though “some of the products and services offered by private vendors may well be good for kids and schools” she has no confidence in their overall quality because "the bottom line is that they're seeking profit first" (Simon, 2012). These cautionary observations signify the larger political, economic, and cultural issues involved in these relationships. In order to better understand what is going on, we need to discuss the role of private industry in education and how these partnerships are formed.

Privatization of Education

The government believes that an improved educational system and higher educational attainment are the primary ways the United States can prepare for and become more active in an increasingly technology-based, global economy (OECD, 2012). Evident in this focus on global competitiveness is that education fits within the larger government agenda of remaining an economic superpower. The government aims to do so in part through the extensive privatization of education by allowing IT industry leaders to have more say in curriculum design and training programs and IT educational resources, which intent to equip students with 21st century skills. Private companies

already play a large role in the education sector through contracts for maintenance services, transportation, and now technological resources.

This section is designed to give an overview of the literature that deals with the privatization of education in order to gain insight on the private sector's role in shaping the organization of educational institutions and the overall valuation of education. This will also provide insight on how the private sector, the state, and civil society interact. In order to understand the significance of the push for privatization of education, one must acknowledge the historical development of the concept.

History of Privatization Efforts in Education

The 1980s is recognized as the era of deregulation, which is the process of reducing state regulations and therefore reducing overall government functions. This is based on neoliberalism, which entails a set of market-logic principles that support the abolition of government intervention under the belief that having no restrictions on economic practices is the best way to develop a prosperous economy and citizenry (Weil, 2002). Privatization is a goal of neoliberalism that suggests that all state-owned enterprises, such as schools and hospitals, should be turned over and run by private investors in order to increase efficiency (Davies & Bansel, 2007). There is a gap in the existing literature that focuses on the perspectives of community members, which is needed in order to tell us what role the public voice has in the privatization agenda. The lack of information on this perspective compared with the realities of the current state of privatization can be used to indicate that public opinion holds little or no weight.

Before delving into a review of the different perspectives on privatization in education, it is important to provide an overview of what models of privatized education

already exist. Privatization of education is seen as the introduction of private enterprises to render goods and services not supplied by the state. Two examples of this are IBM's partnership with New York City to start a school with a technology-centered curriculum, as well as several other IT companies selling educational software and related technology services. The means to the privatization of education exists in the form of charter schools and a voucher system, which entails the state giving families who qualify money to send their children to private schools. The selling of vouchers turns education into a purchasable commodity in the private sector. The concern here is that this significantly threatens public education system by deterring families from having their children attend public schools (Molnar, 1996; Klonsky, 2011; Hursh; 2011).

The voucher system, part of the privatization of education agenda, is promoted through the rhetoric of "choice" and "freedom" where parents have options to decide on where they want their children to go to school (Weil, 2002). Opponents argue that the promises of "choice" are used to obscure "the reality that those who come from economically empowered families are those most likely to be chosen by good schools" (Weil, 2002: 83). Additionally, a majority of the literature discusses the touting of charter schools as an answer to public school failures and also explains how public school funds are being cut while policies are created that favor private sector ventures (Shiller, 2011). The privatization of institutions in the form of vouchers and charter schools has been criticized for the misuse of public funding, which would likely be put to better use by public schools, and for the unforeseen consequence of private schools typically not accepting English second language students and students with disabilities in order to ensure better test scores (Ravitch, 2013).

The Debate

The brief overview has already demonstrated that there is a plethora of research available on the privatization of education. The existing literature is split up into two camps. Much like the ICT debate, which encompasses the technological optimists (Benkler, 2006; Jenkins, 2006, Shirky, 2010) versus the technological skeptics (Dreyfus, 1979; Schiller, 1999; Mosco 2004; Hindman, 2008; McChesney, 2013), the privatization of education debate is also split between strong opponents and strong advocates.

The main argument from the opponents is seen through critics such as Noam Chomsky, who argues that the U.S. government works to protect the interests of private companies over the public good so privatization efforts are made in the name of private companies (Chomsky, 1997; McChesney, 1999). The major claim from critics on this matter seems to be that privatization undermines democracy. With government, there is some say, because the end goal of government is not to make profit, but to render services that wouldn't exist in a private market (e.g. roads, fire departments, police, etc.). If someone does a poor job in elected office, they can be voted out. This is not the case with private companies. There is no transparency and little accountability for the outcomes of what they do which makes it particularly problematic for education. Private enterprises have the sole goal of maximizing profit. However, being that education is a public good meant to benefit the citizenry, there is a misalignment between the motives of private companies and the end goals of education.

The overarching argument from the proponents is that privatization would allow for the more efficient distribution of educational resources and hold educators accountable for educating students. Terms belonging to privatization discourse include,

efficiency, effectiveness, and productivity; “privatization is proposed and implemented under the banner of efficiency, effectiveness, personal liberty, and social freedom” (Weil, 2002: 8). Proponents also believe that if schools were to run more like businesses then there would be a more competitive market for schools, giving parents more choices on where their kids go to school. This school choice campaign is a direct example of how free-market ideology is being placed upon education since it is believed “increased choice increases competition, which drives up the quality of all schools” (see Einhorn and Kolodner cited in, Shiller, 2011). This side also argues that accountability is established through the test results of the students (Molnar, 1996; Savas, 2000; Weil, 2002; Kovacs et al., 2011; Ravitch, 2013). High-stakes testing is an especially controversial aspect of privatization and is discussed extensively throughout this study. This pronounced split in scholastic debates is useful for highlighting the potential issues and consequences of these efforts but it is not entirely conducive to trying to understand the complex nature of these processes and the perceptions held.

This is not a helpful dichotomy because it is not reflective of the complexity of privatization of education and the multiple perspectives that are held. An overly simplistic account stated in terms of binary oppositions runs the risk of being reductionist but a brief overview of the two dominant perspectives in the literature can help one to gain insight on what possible benefits and risks there are to privatization.

Existing Gaps

What is missing from the current literature and needing more attention with regard to the privatization of education are studies on community perceptions and the role of the public voice. This would allow conclusions to be drawn about public opinion. The

hope is that community perceptions would be a reflection of democratic ideals and one could see how privatization, through bypassing this public voice, may be undermining those ideals. The inclusion of public perceptions would also signify general attitudes about the shift in the value of education to market oriented ideas, signaling whether this was happening with or without public support.

The devolution of state functions in education as seen through the privatization agenda has led to a proliferation of PPPs, which call into question what the roles of the private sector, the government, and civil societies are in these partnerships and how they are organized. In order to further understand what is going on, we need to discuss the role of private industry in education and how these partnerships are formed.

Public Private Partnerships in Education

Encapsulating the complexity of public private partnerships, Newman (2001) stated,

Partnerships emerged in the early 1990s promising to smooth over the damage done by earlier forms of privatization whilst not abandoning them. Most importantly, partnerships enabled multiple framings, multiple interests, and multiple objectives to be realized (p.107).

Again, while public private partnerships in education began well before the nineties, this quote encapsulates the dynamic and convoluted relationship between the public sector and private sector. The relationship is not a salient one and continues to be engrossed by controversy. The literature regarding public private partnerships in education (ePPPs) generally includes, the role and impact of such partnerships, devolution of state activities to private hands, ideas on American corporate philanthropy regarding motivations of the partnerships, and from the critical schools, a discussion on the broader influences of neoliberalism.

The literature regarding public private partnerships in education generally finds itself within two opposing camps. Much like the skeptic versus utopian frameworks found within Internet research and the previously discussed privatization debates, there are often two opposing perspectives common in PPP literature. There is the optimistic attitude that recognizes the resources available from corporations but also believes in the mutual beneficial relationship stemming from PPPs. On the other side is the more skeptical understanding that believes PPPs are just a way for private companies to further entrench themselves in the public sector and restructure public institutions while gaining brand loyalty against competitors (Robertson and Mundy, et.al, 2012). This viewpoint suggests that private companies are not interested in the public good and essentially just see these opportunities as business ventures. Before discussing each side and where this study situates itself, it is important to define what is meant by public private partnerships.

As the literature suggests, public private partnerships are multifaceted and contextually significant. The term has been defined in various ways but its definition is often dependent on the type or structure of the partnership along with who is providing the definition. The term 'public private partnerships' (PPPs) encompasses a diverse range of meanings and has been highly contested. It is particularly controversial when discussing its relationship with education. This is because the institution of education has been seen as a socio-political activity in the public sector that exists in order to serve the public interest (Roberston & Verger, 2012). Some argue that public private partnerships in education (ePPPs) are just part of a larger agenda to privatize education (Hatcher, 2006; Robertson & verger, 2012). Others recognize ePPPs as a way of financing schools

and reforming the systemic problems within the institution of education dealing with access and equity (King, 2009).

The World Bank, aligning with and encouraging the optimistic perspective, understands ePPPs as a way to offset the burden of cost from the schools to the private sector. They explain that it is the government's role to guide policy while the private partners deliver the educational services (Patrinos et. al., 2009). Similarly, OECD says that it is,

An agreement between government and a private partner(s) (that may include the operators and financiers) according to which the private partner(s) deliver the service in such a manner that the service delivery objectives of government are aligned with the profit objectives of the private partner(s) and where the effectiveness of alignment depends on a sufficient transfer of risk to private partner(s)' (OECD 2008, P.17).

Contrasting these stark definitions of PPPs, which recognizes them as contracts between national governments and private sector service providers, is a more heterogeneous definition that recognizes PPPs as "joint initiatives between private philanthropic and public sector actors aimed at achieving the public good" (Draxler, 2008, p.16). The idea of "the public good" is highly contested and one that will be explored when researching the rationale and incentives behind such partnership. Simply put, the public good is understood as contributing somehow to elevate social welfare. In the context of public education, the purpose it serves is to create knowledgeable citizens who can contribute to this improved human condition. In order to fully understand the current context, it is necessary to know the history of these partnerships in education.

IT industry-led public private partnerships in education (ePPPs) dates back to the 1960s when IBM partnered up with Stanford to develop the first computer assisted instruction (CAI) curriculum (Wiburg, 1995). In 1967, the Computer Curriculum

Corporation (CCC) now known as Pearson Education Technologies was established to market IBM products to schools. Apple Corporation was the leading technology company to first immerse itself directly into the classroom through donations of computers and accompanying services. Apple launched a research program (Apple Classrooms of Tomorrow, ACOT) in 1986 that studied how computers enhanced teaching and learning environments (Sandholtz, 1995). This was a strategic move on the company's part because it gave them access to the classrooms and an opportunity to push their agenda to saturate classrooms with their products.

As stated previously, the definition of ePPPs depends on who is defining it and the structure of the partnership. With the varying definitions of the concept come differing perspectives. Regardless of the position one holds in terms of their perspective on ePPPs, it is important to not disregard the political and economic forces that shape such relationships. It is not simply a matter of private actors participating in the public sphere but it is about the broader and more complex system, which contextualizes or allows these relationships to evolve. The proliferation of IT industry involvement in education did not evolve spuriously. They are the result of historical processes and ideological shifts within the political economy. For instance, we can say that this trend of increased private sector involvement in education began in the 1980s when there began a significant policy shift toward deregulation. With increasing support from the government towards the privatization of the economy came a reduction in support for public institutions such as education. This nurtured a growing dependency on private funds which has led the way for private companies to entrench themselves in public schools.

There has been a growing body of literature on partnerships between public schools and private partners with a major focus being on various development initiatives that includes the IT industry in the past few decades. The rapid expansion of PPPs in education can be credited to the rise of neoliberalism or the liberalization of the market since the 1980s. The conditions of education or any social institution are determined by the existing social, economic, and political realities within society. Deregulation made it easier for the private sector to enter into education opening up opportunities for the private sector to control and privatize public schools. Scholars working within the political economy framework (Schiller, 1999; Draxler 2008; Srivastava & Oh, 2011; Schiller & Taub, 2001) argue that an important facet of this relationship to consider is the rise of neoliberalism. Toward this end,

Neoliberal theories evolved in the postwar period as a reaction to the advancement of a social welfare liberalism which invested the state with an important role in regulating market activity and redistributing resources to meet the basic needs of citizens (McMurria, 2012, p.257).

The 1980s provided the perfect platform for these relationships to emerge. While the private sector has had a longer history with their hands in public education, it was the social, political and economic transformations that came from this period that nourished the rise in ePPPs.

When discussing technological celebrants versus skeptics, McChesney (2013) argues that “both camps miss the way capitalism defines our times and sets the terms for understanding not only the Internet, but most everything else of a social nature, including politics, in our society” (p. 13). It is through this argument that my research questions evolved. The more critical literature often looks at the relationship between the public and private sector and their influences from a broader perspective, taking into account the

production and construction of power. Recognizing the complexity involved, there is a focus on the political economic contexts and ideological shifts inherent to PPPs in education. Political Economy approaches argue that the IMF and World Bank set in place interlocking policy conditionalities that force governments to enhance the role of private sector in the delivery of public services (Robertson, Verger, Ron-Balsera and Marhatia, 2012). The rise in private participation in educational systems is a representation of shifts in the global political economy. Various researchers make the claim that there is a causal relationship here (Robertson, Verger, Ginsburg, Marphatia, 2012). This suggests that neoliberal globalization, which claims to promote international private sector competition among education service providers is the reason there has been a global resurgence of interest in ePPPs (Mundy, Verger, Manashy, 2012). Others argue that the rising influence of transnational corporations in the global political economy has increased pressure on organizations to expand PPPs (Draxler, Srivastava and Oh). The latter argument is missing the understanding of the business interests in PPPs.

Several case studies of corporate-led PPPs have been completed but most of them have an international focus. Through global discourse on education and PPPs as a form of development, the idea that public private partnerships are the most effective way to improve learning outcomes and preparedness for the future has been embedded in peoples' minds and contribute greatly to social institution reform. This is evident in the shift to market-oriented curriculum. In support of this claim from the scholarship follows as,

The ascending model of educational provision is replacing liberal arts education for all social classes with vocational skills, training, and values developed to prepare select students for careers in the production and sales systems of TNCs" (Schiller & Taub, p. 181, 2001).

It has been recognized by representatives at the World Bank and other organizations including education consultancy firms that private forms of educational provision is an extension of “the privatization agenda” but this is rationalized by corporate leaders through claims that improved academic performance is the focus (Robertson & Verger, 2009, p.28).

The case studies completed on ePPPs generally focus on emerging and developing economies. One in particular looks at Microsoft’s Partners in Learning (PiL) programme in Jordan and South Africa. While it does have domestic partners, Microsoft’s PiL programme is an international PPP in education that focuses on digital inclusion with the objective being to prepare students with digital literacy skills for the digital workplace (Microsoft Corporation, 2006). The case study is meant to highlight the privatization of public education and how ePPPs are used for furthering commercial interests (Bhanji, 2012), which is a common theme throughout all of the case studies on this topic. Bhanji’s case study of Microsoft involvement in education in Jordan and South Africa serves as a resource for the different frameworks that private partners employ such as corporate social responsibility, corporate philanthropy, and business sustainability. This study showed how Microsoft was able to successfully integrate its program in two different political systems with differing policy environments (Bhanji, 2008). There are various ways in which businesses enter into the education market and directly into schools.

Corporate philanthropy is one of the primary ways that the private sector enters the education market (van Fleet, 2012). The available studies on ePPPs show that corporate philanthropy almost always includes additional self-interested motivations in

the form of profit-generation (Giroux 2008; Edwards 2008; van Fleet 2011). It is recognized as a form of corporate social responsibility (CSR) that entails contributions from a private company. It is also referred to as a form of volunteerism, which represents the shifts in the relationships between citizenship and civic action. Corporate philanthropy can be seen as an oxymoron because the goals of philanthropy and business are in contradiction with one another, “Philanthropic interests are driven by social benefit, whereas the business interests are driven by economic benefit” (van Fleet 2012, p.160). The concern behind this incentive structure that is masked by philanthropic rhetoric is that democracy in education is at risk². IT industry-led ePPPs are often pitched as development initiatives using ICTs as the provisional tool that reforms and prepares its users for the labor market.

The literature regarding these initiatives is placed within digital divide scholarship that is now aptly referred to as digital inequalities. The CSR pitch behind developing these partnerships is based on this literature that discusses the growing gap in inequalities and achievement between underserved groups including, rural and low-income students. Critical scholars argue that access to these technological resources is a basic need in the information economy, For instance,

Access to telecommunications services is increasingly assumed as minimum condition of participation in the ‘new economy’ with the telecommunications industry as the foundation for Information Technology, new media and financial services (Chakravartty & Sarakikas 2006, p. 51).

This literature argues that with the uneven diffusion of technology those without access are being left behind thus further exacerbating social inequalities and perpetuating

² For a complete definition of democracy, please refer to pages 12 and 14 above.

existing power relations. It is also argued that the uneven distribution provides barriers to social mobility for those who are the last to adopt the technology (Rogers, 2003).

The methods used in a majority of these case studies tend to be qualitative approaches incorporating participant observations and in-depth interviews. There are some studies that endorse a mixed methods approach by using quantitative methods such as survey reports (van Fleet, 2011; van Fleet, 2012). While quantitative data is useful and can be used to complement qualitative claims, a multi-pronged qualitative approach is most appropriate for researching digital capitalism through IT industry-led public private partnerships in education because it helps the researcher gather a more holistic view of the relationship by evaluating it from multiple perspectives. By analyzing how those involved perceive these partnerships and their impact allows for an appropriate evaluation of what is valued and what concerns there may be. There seems to be a need for more longitudinal studies to accurately evaluate the impact of these partnerships and whether or not the intended objective is being accomplished.

All of the scholarship regarding ePPPs concludes with a call to action for more empirical research and an increase in open-ended debates between skeptics and advocates. The current available literature could benefit from more longitudinal studies to provide a more in-depth evaluation of the impact of these partnerships on learning outcomes. There also needs to be more information on the internal structure of these partnerships. While the study on Future Tech Academy cannot be longitudinal, it will contribute more empirical research and fuel the debates further. The literature helps to inform the study through a critical lens by providing the foundational understanding of these partnerships and a balanced view of both advocates and skeptics arguments. The

study will be situated within the critical schools of thought by focusing on the broader influences of ePPPs and their development.

I align my research with critical schools of thought dealing with digital inequalities and will approach this study from the analytical framework of political economy of communication. The next section will discuss this approach in detail and will also introduce the theoretical basis for my analysis while situating my questions of digital capitalism and ePPPs within the available literature.

Political Economy of Communication and Digital Capitalism

Among the available literature, there has been a lack of critical perspectives on corporate sector involvement in ePPPs. Critical and political economy scholarship provides the basis for the analytical framework for this study on IT industry-led ePPPs. Vincent Mosco (2009) defines and identifies the fundamental characteristics of the Political Economy of Communication (PEC) as "...the study of the social relations, particularly the power relations, that mutually constitute the production, distribution, and consumption of resources, including communication resources" (Mosco, 2009, p.2). The PEC approach will be the analytical framework that will be used throughout this research.

Mosco (2009) describes three main entry processes to the PEC: commodification, spatialization, and structuration. Commodification deals with the shift of goods and services from being valued for their use to being valued for their exchange value (Mosco 2009, p.129). Education has been progressively commodified. With the recent economic recession, public schools have been forced to increasingly rely on external funding as their state subsidies continue to diminish. This represents a shift in the perception of education as a public good to a private commodity, as market values are being embedded

within the public sector generally and the education sector specifically. Mosco and Schiller (2001) draw parallels between NAFTA's definition of education and the corporate restructuring of education that redefines it as a "private good" that benefits the "student/consumer" instead of a "public service" meant to benefit society (p.174). The rise and integration of corporate education suppliers into public education is strengthening the market-oriented education structure. Most of the literature focuses on higher education, but commodification is becoming more applicable towards primary and secondary education, making it relevant to this study.

Mosco and Schiller (2001) provide evidence to the claims that industry is reshaping education through the curriculum and philanthropic dependency discussed earlier. An example is shown through an early partnership between Michigan State University and General Motors, in which GM helped to redefine Michigan State University's curriculum to be focused on computer aided engineering and manufacturing in order to meet the company's needs, rendering the University eligible to receive the 30 million dollar General Motors PACE grant.

The next entry point to the PEC, spatialization, is complex and wide in scope. For the purposes of this project, "spatialization" will be used as Mosco defines it, "the process of overcoming constraints of time and space in social life" (2009, p.157). Directly related to digital capitalism, Schiller notes that digital capitalism "is free to physically transcend territorial boundaries and, more important, to take economic advantage of the sudden absence of geopolitical constraints on its development" (p. 205). While this thesis has a domestic focus, the global geopolitical relations directly influence how ICTs are adopted and used in the U.S. making this notion of spatialization relevant

for this study. Additionally, spatialization is critical to the study of IT industry-led private public partnerships because it is concerned with the “institutional extension of corporate power in the communication industry” (Mosco 2009, p. 158). Furthermore, through spatialization, we are able to understand the significance of corporate concentration in public education, which gives companies control over the production, distribution, and exchange of communication. While there has been an emergence of educational technology companies, there is still a relative monopoly that exists. The concern here for PEC is that monopolies or corporate concentration restricts the flow of information and goods.

The third entry point for political economy of communication is structuration. Structuration is the constitution of social structures through agency (Mosco 2009, p.190). This entry point emphasizes that structures place constraints on individuals through economic, political, and cultural power. It is through structuration, Mosco argues, that hegemonic control is sustained. Inevitably, class, race, and gender are central focuses here and political economy of communication concerns itself with issues of access to information technologies and jobs in IT industries which makes it all the more relevant for this study.

Social class is a chief interest for PEC. Social class has evolved from a rigid distinction of rights and privileges dependent on one’s occupation to a broader self-identifier based on income. The “elite” or upper class has a disproportionate amount of power through ownership and control over social formations, incorporating communication infrastructure including the IT industry. Market liberalization has led to an increase in the disparity between social classes having radical consequences on the

“network society” (Castells, 2009). The most notable consequences relevant to education and technology deal with issues of access to digital resources and uneven distribution of technology leaving under-resourced groups further behind. Structuration, class, power, and ICTs are variables that are considered through the political economy of communication, and lend themselves to the incorporation of Castell’s, network theory of power (2011).

Network theory of power is central to PPPs in general and its relevance to IT industry-led public private partnerships in education is particularly striking. Castells (2011) argues that in the “network society” there are four different forms of power that are exercised through networks. Castells (2010) discusses the rise of the network society that is characterized by networks that are connecting people through electronic communication. By examining the processes of globalization, Castells highlights how those excluded from the networks are being further marginalized. Conjoining this notion of a network society, Castells outlines a network theory of power (2011) in which he argues that power relations are the foundation of society, as those with power shape institutions and norms. Within this conceptualization of network power Castells details four different types. Two of these are most relevant to this study on IT industry led ePPPs and they are “networking power” and “network-making power”. The idea of networking power posits that those included in the network are the ones with power and, like structuration, through their agency and coordination with others in the network, structure society based on their interests. This illuminates the importance of equal access to information technologies. The other form of network power is “Network-making power” which is the most pronounced in ePPPs and is defined as, “the power to program specific

networks according to the interests and values of the programmers...” (Castells 2011, p. 773). This is apparent through the increased control given to private companies over the structuring of curriculum, which directly reflects the company’s interests. Both Castell’s network theory of power and the political economy of communication are appropriately used to make up the analytical framework for this thesis because of the emphasis placed on power, class, and inequalities. With its focus on communication technologies and their role in society, the network theory of power allows us to see who has the power in this context and why.

Mosco (2004) emphasizes the importance for both a material and cultural understanding of digital technologies. In line with the PEC framework, he stresses the importance of historical contextualization in order to appropriately assess the way technology is influencing political, economic, and cultural spheres of society. In his book *Digital Sublime*, Mosco (2004) addresses technological innovation in terms of myths. He argues that what we are experiencing with the Internet and other ICTs is not unique to our time. *Digital Sublime* puts forth the idea that, “cyberspace is a central force in the growth of three of the central myths of our time, each linked in the vision of an end point: the end of history, the end of geography, and the end of politics” (p.13). Moreover, he acknowledges that “cyberspace may not be bringing about the end of history, of geography, and of politics, but there is much to be gained from studying why it is not doing so and why people believe that it is” (Mosco p.14, 2004). This encapsulates the significance of studying IT industry-led ePPPs in that it is crucial we gain an in-depth understanding of how these partnerships emerge and what the broader implications are for society.

Information society, networked society, knowledge-based society, and several other variant terms used to characterize the influence of technology on the current state of society all work to reify what some scholars call the technological myth (Mosco 2004; Hindman 2008). The zeal for information communication technologies that was sustained and demonstrated through the investment patterns found in dotcom companies, even after the Internet crash in 2000, is a testament to peoples' beliefs of the endless potential the Internet provides. Matthew Hindman, in his book, *The Myth of Digital Democracy* (2008), cautions his readers against this utopic view by providing data found from a U.S.-based case study demonstrating the concentration of web traffic to websites owned by predominantly elite white males, and an analysis of the Internet's infrastructure that exposes barriers of representation and biases that prohibit equalized participation. He concludes that the Internet is just an extension of the asymmetric power relations existing outside of cyberspace.

While Hindman's work contributes greatly to critical scholarship by analyzing its limiting effects towards equality and threats to democracy that ICTs bring, it neglects to acknowledge any opportunities for empowerment that ICTs could bear. The other perspective found among available scholarship is that of the technological celebrants. Benkler (2006) promotes an optimistic view of the potentials of ICTs. He describes the current times as a "moment of opportunity" allowing for more civic participation, individual autonomy, and freedom in the public sphere where it was not as accessible before. However, much like the other celebrant scholarship, Benkler (2006) does not acknowledge the possibility of ICTs being the catalyst for exacerbating existing social inequalities as discussed by Hindman.

The issue with these binary viewpoints represented through the skeptics versus celebrant's argument is that it presents the idea that the role of technology in society is binary and black and white. Many scholars discuss why this is problematic and McChesney stresses the need to address the "elephant in the room" when he states,

Celebrants and skeptics lack a political economic context. The work tends to take capitalism for granted as part of the background scenery and elevate technology to ride roughshod over history"(McChesney, p.13, 2013).

While individual arguments may claim to address the complexities involved in these paradigms and relationships, often times a holistic assessment is deficient. By looking at digital capitalism, there is more opportunity to evaluate the missing pieces.

Digital Capitalism and ICTs

Drawing from various studies and a specific analytical framework, the center of this research is based on Dan Schiller's (1999) *Digital Capitalism*. As a reminder, digital capitalism, according to Schiller, represents the shift in cyberspace from being created and used by the military-industrial-university complex, where the government-funded project ARPANET was created for strategic military communication purposes by both government agencies and universities, to the mainly commercial use serving corporate users that we have today. Schiller provides insight on the impact of ICTs in education by dedicating an entire chapter of *Digital Capitalism* to explaining how the private sector has influenced a restructuring of educational institutions in the U.S. through informational technology provisions (Schiller, 1999).

The major theme running through the advent of increased private sector involvement in public education is the reorientation towards a market driven curriculum designed to cater to private sector partners. Indeed, Schiller asserts: "Where once had

existed relatively autonomous instructional and learning processes, increasingly, there were now attempts to cater more directly to labor markets” (Schiller, 1999, p.144). With this came an ideological shift valuing education for the sake of its value on the labor market. Schiller portends that digital capitalism will deepen and IT industry involvement in education will broaden and conflict over regulating the deployment of network applications and private sector involvement will increase. It has been over a decade since *Digital Capitalism* was published. It has been made known that private sector involvement has increased dramatically as demonstrated through IT industry-led ePPPs. According to Herman and McChesney (1997):

In times of technological upheaval where nobody has a clear idea of exactly where things are heading, the smart course for a firm is to hedge its bets by getting involved in several options so it can be prepared to pounce on any one of them that shows commercial potential (p.108).

IT companies have seized the commercial potential in education and it is important to understand what this means politically, economically, and socially. This is important because it means that private interest is potentially shaping the public good and private interest ideas of public good may be at odds with public interest ideas as previously discussed. In sum, this is problematic because the values of capitalism, which allows for this entanglement between public and private, do not generally align with those of the public good.

Methodology

In order to answer the guiding questions and goals of this research, which again include, understanding the ways in which digital capitalism is evident at FutureTech and examining the benefits and limitations of the FutureTech model on students’ academic

achievement and other signs of social development, this study appropriately utilizes a single case study research approach. While there are several variations of what defines a case study, it is commonly understood as,

An empirical inquiry that investigates a contemporary phenomenon within its real-life context when boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used (Yin, 1984, p.23).

Both the applied and theoretical goals of this research will contribute to expanding existing theories related to ICT and social inclusion, technology and education, and education policy studies. A case study approach was most suitable in order to fulfill the objectives of this research.

Rationale for a Qualitative Case Study Approach

Quantitative research cannot capture the multiple dimensions of ePPPs' impact, and the literature suggest that qualitative approaches need to be taken more seriously into account in order to gain an understanding of the complexities embedded within the relationships. With this in mind, this research is conducted through a single case study method. This approach is most suitable because as Yin explains, a case study is the most appropriate research strategy to answer “how” and “why” questions when the researcher has little to no control over events they are investigating and when the main concern is on “a contemporary phenomenon within some real-life context” (Yin, p. 16, 2014).

Yin (2014) explains three applications for case studies, which were used to inform the development of this research design, explanatory, descriptive, and exploratory (p.9). Because this study seeks to answer *how* characteristics of digital capitalism are evident through the FutureTech model, this case study primarily serves an explanatory purpose so it is appropriately identified as an explanatory case study. This case study also has an

important descriptive function that is used to cover the contextual conditions of the school and the current political environment that directly influences its structure.

It could be argued that conducting a survey or simply examining economic data could have answered the second question regarding impacts. However, this would only be accurate if the second question was solely concerned with how many students land IT jobs or if it gave more weight to standardized test results and based the effectiveness of these interventions on this data. The motivation behind the second research question that asks, “what are the benefits and limitations of the FutureTech model in terms of academic achievement and life prospects?” came out of my desire to understand why there has been such a large investment in these new initiatives throughout the U.S. education system without any evidence that they are successful in improving academic performance or acquiring IT related jobs.

Even by taking a cursory look at these initiatives’ and IT companies’ mission statements it is clear that the fundamental belief underlining these initiatives which is that technology serves as an all-encompassing equalizer. The issue is that there is a dearth of research on the outcomes or impacts of these initiatives but curiously, they keep expanding at a rapid rate and more money is still being invested. Therefore, the function of the second question is to interrogate this belief and unveil the connections between these initiatives and the larger political and economic forces such as, global competitiveness and extension of neoliberalism, that are driving their expansion. This is ultimately used to explain how the ideological underpinnings of these initiatives are being used to expand this model that further entrenches the private sector in public education, which in turn furthers the neoliberal agenda.

This study does not argue any definitive causal relationship between the private partners' involvement and student achievement and improved life prospects that the initiative's mission espouses, but it does highlight possible correlations based on specific indicators studied from annual reports for the school that will be detailed in the analysis part of this section. By converging the archival data and interview data, it is my hope that the findings for this question can be used to help policy makers re-evaluate these initiatives and create enabling policies that protect the wider public interest.

A hallmark of case study research is that it allows researchers to immerse themselves into whatever it is they are studying and brings them closer to their data. Bearing in mind that this closeness can result in threats to validity concerning biases and skewed logic, I employed a rigorous reflexive research approach, which will be detailed later in this section. What comes out of this closeness though, in theory, is a deeper understanding of the relational contexts and dynamics of the social processes related to these initiatives and partnerships.

In sum, no other method would allow for such a detailed understanding of these partnerships in terms of organization, impact, and connections to how they operate in their real life context. Again, a case study design is most appropriate in order to fulfill the dual objective of this thesis of informing both realms of policy and theory.

Data Collection

Generally, the data sources used in case studies are documentation, interviews, archival records, participant observation, direct observation, and physical artifacts (Yin, 2013). A major strength of a case study approach is its ability to handle a large amount and various types of data. This study used in-depth interviews, archival records, and

documentation in the form of related news articles and press releases. Data saturation was reached by the eighth interview when no new information was emerging and the existing themes and patterns were confirmed.

Research Site Selection

The criteria for research site selection entailed a primary or secondary public school that was started from the ground up through a collaborative public private partnership involving at least one major IT company. The rationale behind focusing on K-12 education was four-fold. First, there has already been extensive research on higher education. In fact, the few studies approaching this topic from a political economy of communication perspective all focused almost exclusively on higher education. Second, the ages of K-12 students are formative ages in terms of adopting technology and learning in general so I believed that technology would have the most potential to influence youth and more specifically, the supposed generation of digital natives. Third, this also allows me to further examine signs of impact based on indicators such as after high school plans and jobs acquired by the school's former students. Finally, this innovative model is specific to K-12 schools. Another criterion was that the demographics of the school's students had to have a high concentration of low-income students in order to interrogate the underlying belief that technology acts a sort of a silver bullet. FutureTech came to my attention while watching a state of the union address when President Obama was praising the school and encouraging the expansion of these models across the country.

Participant Selection: IT Partners and FutureTech Educators

Originally, it was my plan to interview FutureTech teachers, technology coordinators, the principal, as well as representatives from the IT industry partners. Obtaining IT industry informants was challenging and many stated in fact that they were legally barred from talking to researchers. In order to make up for this, I analyzed each partner's mission statements found on their education partnership pages. The IT companies and related foundations that were looked at included, Microsoft, The Bill and Melinda Gates Foundation, IBM, Cisco, Apple, Dell and Hewlett Packard.

Eight educators from FutureTech were successfully interviewed. The informants were recruited through selective and purposive sampling with an effort to include a diverse sample. I sent out individual emails in five batches of ten until I was able to secure twelve interviews, of which, eight were used until data saturation was reached. I made sure to include three science teachers, three English teachers, and three technology teachers in each round in order to get perspectives from multiple fields to ensure a balance of STEM and non-stem standpoints. I was fortunate enough to gain an interview with the school's principal and technology coordinator, which gave me insight into the planning and organizing processes of these partnerships and school structure that others could not offer. This helped to make up for the lacking industry representation of this study. In all, this study's interview data is composed of six teachers, one principal, and the school technology coordinator. One of the teachers also acted as a grant seeker for the school. The criteria for teacher selection included teaching different grade levels, having a mix of newer teachers and veterans who had been there since the school's inception,

and having at least three different subjects were represented. The subjects represented from my interview participants include, English, physics, mathematics, and technology.

Table 1: Interview participants.

Title	Subject	FutureTech Experience	Sex
Principal	N/A	5 years (1.5 as principal)	F
Technology Coordinator	Technology	7 years	F
Teacher	Physics 9th Grade	5 years	M
Teacher	English 10th Grade	3 years	F
Teacher	Math 7th Grade	7 years	M
Teacher	Technology 11th Grade	2 years	F
Teacher	Physics 7th Grade	4 years	M
Teacher	Math 6th Grade	1 year	M

Interviews

It is understood that qualitative interviews are recognized as “naturalistic extensions of conversation” which provides the unique opportunity for participants to be placed as “partners in the research enterprise rather than subjects to be tested or examined” (Rubin & Rubin, 2005, p. 12). As outlined in the sampling section above, eight semi-structured, in-depth “active” interviews were conducted over the phone. The active interview structure is where “production is spontaneous, yet structured – focused within loose parameters provided by the interviewer” (Holstein & Gubrium, 1995, p. 123). This allowed for a more relaxed conversational style interview setting, which encouraged the respondents to feel comfortable and also allowed enough flexibility for me to ask clarifying or non-scripted follow-up questions. These interviews were initially scheduled as face-to-face interviews but due to inclement weather issues, mid-semester break, and standardized test schedules, the interviews were done over the phone and I relied on digital recording devices to save the responses. Light notes were taken during

the interview and used for creating reflection memos. Interviews were transcribed immediately following the end of each interview and these transcriptions made up the interview portion of data for data analysis. Follow-up interviews took place when paradoxes arose among informants or between the participants' responses and document analysis.

The interview questions were constructed to elicit responses that would provide insight that could be used to answer the central and sub-research questions listed above. The informants were asked a mix of closed-ended and open-ended questions (see Appendix A). The closed-ended questions were background questions designed to find out the educator's experience and included how long they have been teaching and where all they have taught. The open-ended questions that were asked included questions regarding the structure of these partnerships, the perceived benefits and pitfalls for student learning and increased life prospects for the target group, the various stakeholders' roles in these initiatives, details on curriculum design, and general perceptions on public private partnerships in education and their thoughts about the future direction of the U.S. education system.

Archival Document Data

The second set of data for this study was made up of archival documents, IT partners' mission statements for their education partnerships/initiatives, and related news articles. Analyzing documents has been noted as particularly useful for studies related to policy, organizations, and history (Yin, 2013). The archival data was collected from the state DOE and all available data reported from 2007 (the earliest data available) to 2013. The data for the following indicators were collected: graduation rates, after high school

plans, standardized test scores, No Child Left Behind results, attendance, Advanced Placement exam results, SAT results, school demographics, and overall school report card. For an unknown reason, several years of data displayed a note stating that the existing data for certain years and categories were taken down and being reviewed. This explains why not all categories have the same amount of years covered. This could be because of the new common core standards being developed and implemented across the country. It should be noted that the indicators looked at are limited because there are many other factors not accounted for that can explain discrepancies or low test scores. In order to help account for these limitations, demographic information such as the percentage of English Language Learners and students with learning disabilities is presented alongside the student achievement indicators. The reasoning for using this data was because these are the measurements that the federal government and these private partners use to evaluate the effectiveness of relevant initiatives and is the only archived data that can show signs of impact over a prolonged period of time. Moreover, sixteen news articles were chosen based on results from a Google search with keywords, “IT industry and the school’s name”. The purpose of this was to contrast the claims made in these articles and the data gathered from the interviews and department of education annual reports for the FutureTech.

Data Analysis

As outlined above, the data for this case study was collected through a variety of methods (in-depth semi-structured interviews, archival documents, and document reviews). The data collected were analyzed with memos, coding, and matrices that categorized and contextualized the emergent themes and patterns. As indicated earlier,

each interview was recorded using a digital recording device and then transcribed immediately following the completion of the interview. For the eight interviews completed, 163 pages of data were transcribed. Memos containing contextual notes and initial responses and connections were also written after each interview in order to foster the analytical thinking process and to note details that stood out that may not have been initially apparent in the transcripts.

Coding rubrics were constructed based on both predetermined categories based on characteristics of digital capitalism listed in Dan Schiller's (1999) *Digital Capitalism*, as well as emerging patterns that related to the main questions of this study. Coding began after the first transcription was complete and was repeated for every transcript. I created a word document with a running list of open codes as I examined each interview transcript. Each transcript was analyzed for repetition of words and phrases, which were used to generate the codes. I constantly compared each transcript to one another looking to see if codes from previous transcripts were also evident in the following transcripts. Recurring codes were used to create the main categories. An initial set of codes were constructed and then further developed throughout the entire data collection and analysis processes. All interview transcripts were then reread specifically to accommodate for new and evolving trends that needed to be added to the coding rubric.

Due to the overwhelmingly amount of data collected, I initially intended to utilize the computer assisted qualitative data analysis software (CAQDAS) NVivo in order to help with the coding process but due to technical difficulties with the software corrupting the data files it was primarily used to organize the data and for purposes of convenient retrieval. This worked out because it allowed me to stay closer to the data. To this end,

NVivo was mainly used for organization purposes while the actual coding and analysis was done manually. Additionally, follow-up interviews were conducted for responses that may have been lacking clarity and for paradoxes that were discovered once converging the other data sources with the interview transcripts.

The data analysis techniques for this study employed what Glaser and Strauss (1967) called “constant comparison”. This entailed starting the data analysis process with some codes, categories and themes. An emerging theory was suggested after an initial overview of the first interview transcript. The next transcript and every one therein after were compared to the data that preceded it. This could best be illustrated by constantly comparing the tentative theories and classification schemes for organizing and gaining an understanding of what is happening in the bigger picture.

A notable risk associated with the data analysis phase for case study research designs is that data is treated as an independent source of data, which hinders the possibility of gaining a holistic understanding of the entire case. Yin (2014) warns against treating data separately arguing that this is not the purpose of a case study. Rather, the researcher must ensure that the data are converged in an attempt to understand the overall case, not the various parts of the case, or the contributing factors that influence the case. This explains why the data chapters of this thesis are not broken up by methods or data sources and instead, they are organized by research questions.

The data analysis was conducted concurrently with the collection of the data by writing the reflective memos, making preliminary interpretations. Ultimately, the data was analyzed for themes. The data sources were only treated separately for organizing and coding purposes. All data sources were constantly compared to one another and

converged in order to gain a holistic understanding of the processes occurring and situating them within the overall context of FutureTech.

The major categories identified for the study's first question, how is digital capitalism evident at FutureTech include: Vocationalism, privatization, and techno-venture philanthropy. These were pre-determined categories based on the characteristics of digital capitalism identified in the literature, which were confirmed when they became reoccurring patterns in the data. Other pre-determined categories were created before the thematic analysis and coding processes took place but there were not enough relevancies in this study's data sources to keep them. If the transcripts and mission statements did not discuss these characteristics or aspects of digital capitalism then those categories were thrown out.

In regards to analyzing the archival data, I tracked all available data found for the indicators listed above and printed these documents out. I compared each category with each year in order to see increases or decreases in the scores or measurements. Analysis for the news articles and press releases followed the same thematic analysis process that was applied to the interview transcripts. The same codes and categories generated from the interview transcripts were used for conducting a thematic analysis of these sixteen documents.

Matrices were constructed from the archival, documentary, and interview data to identify and compare the patterns, trends, and paradoxes. As an example, if newspaper articles have claimed that eighty percent of students in a particular school participating in an initiative are obtaining jobs in the IT industry upon graduation but the interview participants said that most of their students are going into journalism, then the data

sources were contrasted and these claims need to be further investigated. Again, follow-up interviews were conducted when questions emerged from the paradoxes discovered through the matrices for further clarification and confirmation.

Research Journal

In order to remain close to my data and to increase the credibility of this study's findings I kept a research journal throughout the entire data collection and analysis process. Janesick (1998) encourages the use of research journals in order to deepen the researcher's understanding of the research processes. I wrote down initial reactions, preliminary connections between the data and the theoretical underpinnings framing this study, as well as anything that stood out during the interviews that I wanted to cross-reference with my other data sources. This highly reflexive technique also helped ensure a more rigorous reflexive approach that is discussed towards the end of this section.

Credibility

Credibility or "believability" Yin (2014) recognizes credibility as how accurately the researchers represent how things really are from their participants' standpoints. sources and follow-up interviews when paradoxes arose. As mentioned above, a key advantage of doing case study research is its ability to handle a large amount and a variation of data. By using more than one data source, I was able to compare the different data sources performing cross-data validity checks. Lastly, the findings presented in this thesis are based on the high level of consistency across the interview participants' responses further supporting the dependability of this study's findings.

A Reflexive Approach

Reflexive research entails a continuous process of reflection throughout all stages of the study but with particular attention to the relationship between the researcher and the research (Malterud, 2001). Understanding that all meaning is interactively and culturally constructed, I made sure to analyze and reflect on the entire research context instead of individual data sources. This allows for the complexities, layers, and dynamics of the knowledge production that is taking place to be identified resulting in a deepening of insight into what is being conveyed and its relational contexts.

In support of this study's reflexive research approach, it is necessary to discuss the initial motivation behind this thesis, detailing the positionality of myself as the researcher. When I was a junior in high school my family experienced serious downward mobility where we faced the loss of electricity, water, and our home. I went into my junior year as an honors student with a nearly perfect grade point average but after losing access to the Internet where my homework was to be accessed and completed, I struggled to maintain even a 3.0 grade point average. I had lost the chance to go straight to a four-year university that I was on track for but really did not think much about the cause until I was able to transfer to the University of California San Diego (UCSD) and was studying digital inequalities among youth. It was at UCSD that I began thinking critically about and studying the reality of underserved youth who do not have access to these technologies. I began to wonder what this meant for these students in an increasingly technology-centered society where ICT access and skills is considered a prerequisite to participate in the labor market. During my first year at UCSD I obtained a research assistantship where I worked with underserved youth at a community technology center

and was able to see first hand the effects of this. It is due to my critical education and my multiple positionalities as an insider and outsider that I question this promise of technology as an equalizer, which contributes to this study's analysis. Ultimately, after witnessing the policy oversights and perpetuation of existing inequalities among these youth, I was determined to fully understand the larger processes behind this, which serves as the inspiration of this thesis.

Limitations

While single case studies have been subject to criticism based on their inability to render generalizable conclusions, the knowledge generated by them are significant in their own right by contributing instrumental (i.e. policy) and intrinsic (academic) value through theoretical relevancy and empirical evidence. For example, aggregating conclusions collected from single case studies enables theory building. While this case study may not represent general populations, the school and its model that is being examined here has provided the foundation (including its ideological substructures) for its replicas that are being built throughout the country. Therefore, while it may not represent these other schools completely because as this study advocates, each has specific cultural and contextual settings that significantly influence how they all operate, they are shaped and driven by the same neoliberal agenda and other social, political and economic forces. The strength of doing single case studies is the richness and depth of their explorations.

Another strength of this approach is the ability to collect an array of non-linear data and is particularly conducive to this study's emphasis on contextualization that will promote a deeper understanding of the structure of these partnerships, the roles of the

various stakeholders involved, and the broader influences. Much like other forms of ethnographic research, a case study design,

Also allows the examination of the phenomena not only in its immediate social, political, and economic contexts but also in a larger historical framework, as well as its insertion in the broader regional, national and global context (La Pastina, 2005, p. 141).

Another critique directed at case study research is that the findings are not reliable because the researcher is too close to the case being study that it biases the findings. In order to combat this, I have employed a “reciprocal ethnography” technique as proposed by Lawless (1993) in Semati (2004), where informants were contacted for follow-up discussions to clarify and confirm that their responses were being properly represented.

Conclusion

Ultimately, a case study approach allows for the collection of a vast amount of rich data. Interviews provide important details and contextualization of the related processes and phenomena that are taking place. Memos have added to this because the initial reactions and preliminary conclusions drawn throughout the data collection process add more detail for the context and aiding in the final analysis. By utilizing multiple data sources and methods, these strategies increase the chances of protecting the study’s conclusions from validity threats.

CHAPTER 3

EVIDENCE OF DIGITAL CAPITALISM AT FUTURETECH

The common belief among the skeptics is that private companies are imbedding themselves in education through these partnerships in order to shape and control the education system according to their own interests and ideologies (Schiller, 1999). Related to this concern, Upton Sinclair aptly observed that: “Our education system is not a public service, but an instrument of special privilege; its purpose is not to further mankind, but merely to keep America capitalist” (Sinclair, 1922: 18). Again, the primary motivation behind this study is to gain and share a deeper understanding of how political, economic, and other social processes are driving and shaping these partnerships and what this means for the underserved communities they are serving. Therefore, this chapter engages with the notion of education-industrial-complex defined earlier as “networks of ideological technophile, and for-profit entities that seek to promote their beliefs, products, and services in furtherance of their own goals and objectives” (Picciano and Spring, 2014) and characteristics of digital capitalism in order to expose how forces of digital capitalism are evident at FutureTech. The data presented in this chapter is then used to examine the organization and role of the private partners in the FutureTech model in order to see how neoliberal objectives such as privatization may or may not be undermining democracy in education through IT industry-led public private partnerships.

Schiller poses the question – how far will education be transformed by profit seeking motives? The trends discussed throughout this chapter will get us closer to signs

of the answer to this question. This chapter outlines the five major themes that arose through thematic analysis of the 163 pages worth of interview transcripts and the mission statements from FutureTech's IT partners. Each transcript was analyzed through section coding based on each interview questions. After coding was completed the codes were categorized by major themes. Many themes became evident but only those that encapsulated the characteristics of digital capitalism, as outlined in the literature, were given extensive attention and are detailed here in order to answer the main research question for this study. Before the data collection process was initiated, an initial predetermined set of categories was created based on the characteristics of digital capitalism, which would help to keep the data focused on answering this question. Some of these initial categories were not relevant to the collected data and were therefore thrown out. The themes that emerged are discussed in this chapter.

The major themes identified and analyzed have been categorized as follows: 1) vocationalism 2) privatization 3) techno-venture philanthropy. Each of these themes and their subthemes are defined and contextualized with regard to their relationship to digital capitalism at FutureTech. The rationale behind them, detailing their significance and why they were chosen is also presented. After defining each theme and their significance, a section on how they are interrelated among themselves and broader political and economic processes will be presented. The chapter concludes with a summary of the findings presented here and an outline of the broader implications.

Before defining the themes, their significance, and how they interrelate with each other to explain how trends of digital capitalism are working at FutureTech, it is important to discuss how these categories were determined and ultimately used to answer

this question. As stated above, the major themes that are outlined here emerged from a combination of pre-determined and emergent themes. All of the themes in question are related to characteristics of digital capitalism as presented by Dan Schiller (1999).

Characteristics of Digital Capitalism in Education

Dan Schiller (1999) starts off his book, *Digital Capitalism*, outlining the overarching aim of digital capitalism by stating,

The architects of digital capitalism have pursued one major objective: to develop an economy wide network that can support an ever-growing range of intracorporate and intercorporate business processes” (Schiller, 1999, p.1).

Thanks to the advancement of neoliberal policies with government support, this objective is becoming realized and is especially apparent in the realm of education. The foundational goal of neoliberalism is stripping unwanted state oversight and regulation of the economy in order to obtain unencumbered freedom of action for private corporations. What we are seeing as a result of this is corporate control over the restructuring of social institutions. The following findings presented in this chapter suggest that education is on the brink of complete corporate control.

The following themes identified through the thematic analysis of the interview transcripts and mission statements from FutureTech’s IT partners are all characteristics or direct outcomes of digital capitalism. Digital capitalism in education is essentially characterized by the infiltration of the IT industry that has placed education at the mercy of for-profit market logic. This integration of IT industry into education did not happen in isolation but was actually part of larger political and economic processes that paved the way for businesses to get their hands in education. While the integration of technology in education began much earlier than the arrival of the Internet (as demonstrated in chapter

two), the following statement exemplifies how this immersion of IT industry in education evolved from larger processes,

Widespread Internet access for schools became a contested policy at the federal level in 1998 as it became intertwined with continuing liberalization of telecommunications—bid fair to establish a vital new channel through which corporations might gain access to students (Schiller, 1999, p.182).

There has been some skepticism among certain scholars who are reluctant to accept that there is something qualitatively new with this notion of digital capitalism. Critics argue that corporate political hegemony over society has existed since before the First World War (Schiller, 1999, p.205). Schiller acknowledges this but further argues that with digital capitalism, geopolitical constraints on development no longer exist and have thus caused a substantive shift where activities previously immune to the influence of for-profit market economy are now being appropriated by capital (Schiller, 1999, 206).

Supporting his argument that digital capitalism bears substantial influence, Schiller states,

Over roughly a century, to be sure, big business has operated as a kind of senior partner in league with a variety of nonbusiness institutions—schools and universities, museums, professional societies, government agencies. Today, by contrast, corporations are committing themselves to a direct takeover of these key functions of social reproduction (Schiller, 1999, p. 205).

While this intermingling of business and public sector has a long history, what we are seeing with digital capitalism in education is a movement towards a complete take-over of the education sector, which has tremendous cultural and ideological implications.

Following the presentation of the findings, this chapter will conclude with a discussion on these cultural and ideological implications.

Vocationalism

Vocationalization of education can best be understood as a shift in the purpose and value of education from intellectual growth to a “functional” purpose where schools are now seen as places to develop skills catered to the labor market. This idea of vocationalism is at the heart of the education reform movement discourse which is espousing that there is a shortage of skilled-laborers for technology jobs, which IT companies explain why they are having to hire internationally. Many argue that this is an illusion and a ploy from the private sector to gain control over the instructional and learning processes.

While vocationalism has a longer history in schools, since the industrial revolution sparked a new emphasis on science and technology, we are now seeing a complete shift away from appreciating education for its intrinsic intellectual value towards an education system that caters primarily to the labor marker. This has been demonstrated by the increasing amount of courses being taught with a vocational nature and the extensive cuts in funding for the arts, humanities, and physical education. Vocationalism is directly connected to economic growth, global competitiveness, and corporate political hegemony, which, in turn are all directly related to digital capitalism, making it significant for this study.

Vocationalism was a predetermined category that was selected based on the amount of influence digital capitalism has on its advancement. Although it was a predetermined category, the prevalence of vocationalism in both the mission statements and interview data support its significance. This section presents the findings from the mission statements and interview data that relate to vocationalism through various sub-

categories that were identified in the analysis in order to further explain how forces of digital capitalism are expressed at FutureTech. Three sub-categories of vocationalism were identified and will be discussed below:

- Autonomy over Instructional and Learning Processes
- 21st Century Skills Agenda and Global Competitiveness
- Technology Enabled Life-Long Learning Redefined

Autonomy over Instructional and Learning Processes

There is no national curriculum for K-12 schools in the United States. Common Core Standards is the first attempt at standardizing curriculum for the entire nation. The Common Core Standards initiative is intrinsically linked to and supported by private sector interests and will be discussed later in this chapter. Currently, the Federal government is responsible for crafting legislation that requires schools to adhere to a certain set of national standards but they act as general guidelines to be followed by local school districts. The creation of a basic outline and guidelines of public school curriculum is the responsibility of states. Requirements for graduation and passing courses are strictly set by the states. The topics covered in standardized tests inform what is taught in schools but local schools are given autonomy in deciding how they are taught. Generally speaking, schools have flexibility and agency in determining how the state curriculum requirements are met. Rapid technological advancements and global competitiveness has drastically influenced changes in local curriculum design.

One of the characteristics of digital capitalism propelling this shift towards vocationally oriented institutions with courses designed specifically to prepare students for IT related jobs, such as the FutureTech model, is that the curriculum design process is

heavily influenced by private investors. The new Common Core Standards being pushed by the Federal government is an extension of this same idea. The standardization of curricula transfers the decision-making power away from public stakeholders and local beneficiaries to federal officials who are supporting private sector interests.

Through the interviews conducted with FutureTech educators, I learned that the Bill and Melinda Gates foundation contributed 400,000 dollars to the school and remained active through various professional development events, visitations to classrooms, and guest lectures from Microsoft representatives for the first couple of years and then virtually disappeared. One teacher that I interviewed, who was the head of the partnership planning committee, meaning she was responsible for seeking partnerships and grants with private companies and philanthropists, was quick to cut me off and correct me when I referred to the school as part of an innovative collaborative partnership. She remarked:

I need to stop you right there. We [FutureTech] are no longer part of a collaborative partnership model. I know that is what the President and media and even the Gates Foundation still try to claim but the truth is, the magic of the Gates Foundation left us after the first few years. We have not seen any money from them and now operate on the same budget as the rest of the public school districts around here. Yes, they were influential during the school's inception and in terms of its mission but yeah, that magic left us a long time ago. We do still have other partners but resources are limited.

What is pertinent and relevant to note from this response is the claim that the Gates Foundation was influential during the school's inception in terms of its mission. Just because the Gates Foundation is no longer active, physically, at FutureTech does not mean that their early involvement has not influenced the school's continued focus and goals. By having this mission in place, they have set the direction and focus that the

school takes. Through this, I argue that digital capitalism is very much influencing the structure and organization of the school.

However, curiously, what was further revealed through the interviews was there are extensive infrastructure barriers preventing the school from successfully achieving the goals stated in the mission of this initiative and FutureTech model. Every interview participant expressed frustration with the unreliable Internet connection they have to deal with. They said that this prohibited them from successfully incorporating technology in their classrooms and although the mission is to have a technology-driven curriculum, the lack of infrastructure made it difficult. One teacher expressed:

Hey, its great that we are able to supply every student a laptop during class, and I am grateful, I am, but what we can do with them is severely limited because of how bad our Internet connection is. Today, for instance, in my first period class, which is a class of 24 students, I was able to get six online for the entire class period and the most I had on at one time was twelve so yeah...I had them get in groups and that was fine but then in my second period class, not one of my students was able to get on. I heard it use to be much better but it has been a constant issue for the four years I have been here.

Even though these barriers exist and Microsoft has virtually abandoned the school, notes of digital capitalism still underlie the school's structure and curriculum design.

Pertaining to instruction design and learning processes, each interview participant was asked: What is the role of the private partners in curriculum design? What is the role of the corporate partners in terms of services, hardware and professional development? How do these partnerships influence the learning environment at FutureTech? Are there any guidelines given to you for how to incorporate the technology in the classroom? How do you think the school's partnerships with leading IT companies are influencing the structure of the school?

The findings from the interview data reveal that the curriculum design and implementation process does in fact echo trends of digital capitalism mentioned earlier, such as, catering to market needs by lessening the focus on arts and humanities as well as educators feeling pressure to use the school's partners' products. Interestingly, three teachers offered up similar feelings about the obligation they feel to use certain smaller partners' products even though they felt there were much better ones available out there. One of the physics teachers expressed his feelings about it this way:

You know, I also have a good working relationship with the Center for Applied Special Technology (CAST) and they have an online modular curriculum that I use. I have also brought in other business, like last Friday, one came in to introduce the students to this software they developed and tested it out and it went well. It was lacking in a lot of ways and the kids were able to give feedback but now they want to come back and continue working with us and I feel like I am committed even though there are definitely better products out there. I don't know. You can't bite the hand that feeds you, you know?

Regarding the question: what is the role of the corporate partners in terms of services, hardware and professional development? The teachers I spoke with that had been there since the school's early days and the new principal that has recently taken over were the only ones who could answer this question. The newer educators at the school were in the dark as far as the partnerships were concerned and two of them even asked me if I could tell them who their partners were because he had no idea besides the Gates Foundation to which he echoed others by saying they are no longer involved in the school.

The responses of those who knew were consistent and revealed that the IT partners served different roles but it was complicated and their overall involvement for larger IT partners has almost disappeared. Interestingly, they said the initial grant given to FutureTech is still being used for professional development purposes focused on

tending to the particular cultural needs of their students. This will be discussed in detail later on in the techno-venture philanthropy section of this chapter but part of this school's mission is to foster a community-based culture between teaching staff and the students where teachers are seen as allies for the students since they come from difficult home lives. In fact, one of these interviews had to be rescheduled because a student had a family crises and a social worker needed to meet with the teacher who ended up taking care of the kid that night.

Moreover, that initial grant was also used to supply the school with laptops, which were replaced with update versions about four years ago. They have since had to seek other sources of funding to try and keep up with rapid technological advancements but explained that most of their hardware is outdated and they did not have any more money to keep up with technological innovations. When I followed up and asked about the infrastructure issues the technology coordinator told me that it was reliable in the past and she is not quite sure what happened or who is responsible for it. By looking at the listed IT partners and their roles, it was found that Cisco was listed as the responsible party for ensuring that the school had reliable Internet access.

As mentioned above, the presence of major IT partners who were once visibly active in the earlier days of the school has faded. However, teachers have been pro-active in making their own connections and bringing in smaller partners for the school. Drawing attention back to the quote from one of the physics teachers who expressed their obligation to use a partner's product even though he knew of much better ones that were available, this teacher developed a personal relationship with that partner and through this networking, he brought them in as a resource for the school. Another teacher reiterated

this in his response to the question: how do these partnerships influence the learning environment at FutureTech? He stated:

I know that some teachers work with smaller companies to pilot different programs. UDL studios is one that we were looking at yesterday during our professional development and the teacher even confessed that he is a close friend of theirs now and that it's awesome they came in a partnered with us but their product isn't one of the best ones that is out or available but he feels like he is now tied to it because he had them come in and work with him and his class and offered this resource.

Finally, in terms of the question: how do you think the school's partnerships with leading IT companies are influencing the structure of the school? The findings reveal that the IT companies' influence is waning much like their presence and involvement in the school. The teachers that have been there since the school's inception said that the original mission of FutureTech's model was designed by the founding funders and the courses offered and mission that exists today reflects those original objectives. The school is doing the best it can to sustain a technology-driven curriculum but budget constraints resulting in unreliable access and out dated hardware, is proving this to be a major challenge.

Parallel to the idea of private interests driving curriculum design and educational objectives is that of the 21st century skills agenda. The 21st century skills agenda is a tool that is used in support of advancing the nation's economic and political position as a global superpower.

21st Century Skills Agenda and Global Competitiveness

Technology and education are recognized as transformative forces that drive economic growth. Much emphasis has been placed on curating public-private practices with the intention of increasing global competitiveness. It should be clear by now that the

introduction of information technologies has resulted in a redesigning of educational spaces, “for IT is not only a means of global expansion, it also represents a system for linking students and public institutions intimately to globalization processes, thereby reinforcing rationalities of global competition and interconnection” (Monahan, 2005: 274). IT companies have been quick to realize the immensely lucrative nature of the education market and their presence in education continues to expand as they further entrench themselves through various initiatives. They are doing so under the guise of global competitiveness and the 21st century skills agenda. The discourse around the importance of 21st century skills and this instrumental view of education are parallel and have provided a way for the private sector IT industry to become further entrenched in education.

The motivation and framework for the 21st century skills agenda is best illustrated in the policy guide published by the coalition known as, the Partnership for 21st Century Skills (P21):

Our ability to compete as a nation—and for states, regions and communities to attract growth industries and create jobs—demands a fresh approach to public education. We need to recognize that a 21st century education is the bedrock of competitiveness—the engine, not simply an input, of the economy.

The Partnership for 21st Century Skills was founded in 2002 as a coalition that brought together policymakers, education leaders, and businesses in order to ignite a national K-12 education reform initiative that focuses on preparing students for 21st century jobs.

Unsurprisingly, the primary partners involved in the coalition include: the U.S.

Department of Education, Apple Computer, Inc., Cisco Systems, Inc., Dell Computer Corporation, and Microsoft Corporation (www.p21.org, 2011). These are also the same

partners involved with FutureTech. Supporting the argument above, executive director of education at the Bill and Melinda Gates Foundation, Tom Vander Ark, is quoted on the foundation's mission statement page saying, "If we fail to prepare all of our nation's young people for college and work, the economic and civic health of our nation will continue to be at risk."

Engaging with the question of digital capitalism at FutureTech and this 21st century skills agenda, the relevant questions that were asked include:

- Why do you think it is important that students be technologically literate?
- Do you think that these students will be better prepared for college and or labor market because of the technology focus? Why or why not?
- Why do you think these companies are interested in these partnerships?
- Do you believe that these students have an advantage over others because of the exposure to technology they are getting?

In response to the question, why do you think it is important that students be technologically literate? All respondents believed this to be a prerequisite to having a chance at any kind of job today. Some likened technological literacy to that of traditional literacy and stated that it was as if people are now required to know two languages, their primary language and mastery of technological skills as another. In terms of 21st century skills and jobs, one teacher stated:

It is going to be a part of every industry and any job that the students are going to be competing for. The goal for our students is that they're not only confident in all of the office products but that they can also, you know, build websites, and know photoshop and have those skills that going to be increasingly in demand for every job. Every job is going to have this expectation and if you want to make it, well...you have to know this stuff.

Another teacher described it this way:

I think it's incredibly important for students or any individual to be technologically literate or proficient because of the rapidly changing and technologically advancing world that we live in. It is shaping everything. That's why there is so much pressure being put on us... and even more so with this group of kids since they come in so behind and don't have access to this stuff at home, but pressure to make sure everyone is getting these skills so they can actually get jobs.

Similarly, the private partners put great emphasis on the importance of 21st century skills.

One of the school's major partners, Dell, states in their mission statement:

In the current economic environment, the long-term international competitive differentiator is workforce skills. To this end, students need to be proficient in ICT literacy, critical thinking, problem solving, collaboration, effective digital communication, creation and use of multimedia documents, and data analysis and interpretation.

Additionally, describing their participation in the Partnership for 21st Century Skills, they further illustrate the importance on acquiring these skills by stating:

For nearly a decade, Dell has been a member of the Partnership for 21st Century Skills (P21), joining with upwards of 40 leading educational and business member organisations to promote rigor and relevance in student outcomes, along with educational support systems that are aligned to include both core subjects and 21st century interdisciplinary themes. Core subjects include: English, reading or language arts; mathematics; science; history; geography; government and civics; economics; world languages; and the arts. For our industry, a focus on science, technology, engineering, and mathematics (STEM) subjects, is critical.

While the implications of this statement will be discussed in detail in Chapter Five, suffice it say for now that this encapsulates the movement of vocationalization of education, influence over learning and instructional processes, and overall expansion of private sector involvement in education. That is in essence, digital capitalism. The

relationship to FutureTech is clear in that this is a major partner and aligns with the school's objectives and structure.

Regarding the question, “do you think that these students will be better prepared for college and or labor market because of the technology focus? Why or why not?” As well as the question, “do you believe that these students have an advantage over others because of the exposure to technology they are getting?” respondents had mixed reactions. In sum, they all believe that under circumstances where inequality and access to technology is not an issue, then yes, but for FutureTech students, it is hard to say that they have any sort of advantage because they come in at least one grade level behind and come from difficult home lives. Additionally, it was revealed that these students do not have access to computers or the Internet at home aside from their cell phones, which is hardly an equivalent substitute. Responding to the question about their thoughts regarding the importance of technological literacy, an English teacher said:

I mean I think it is do or die. You're not going to be able to exist in this world without knowing this stuff. It is like learning to read and write. It is like literacy. I look at my children who are 9 and 11 and their technological skills are just vastly superior already (to FutureTech students) because they have access to it at home. They also have reliable access to it in school and it's backed up with an education system that is...you know...resource heavy. Their learning skills are going to help them for the future workforce and it is not that way for my students. My kids are being innovative because the opportunities and resources are there for them. As they get more experience it's just going to get better. The later that happens in life, you know it's like reading, that skill is just harder to get and that's one of the reasons my students are so behind. You're a sponge when you're young. These kids have been exposed to technology from a young age. My students have not. That won't cut it anymore. They are set up to fail.

A ninth grade technology teacher said:

I think that the challenges that my students face are really significant. Not just academically but they come from rough households and have bigger problems to worry about than passing this class. I think that um...they get to me in the 9th grade so far behind that it would be difficult for me to say that they really have a whole lot of advantages. It just feels wrong to say they have advantages in any way considering the environments they live in. They are phenomenal people and I feel privileged to work with them. But no, technology cannot bridge these barriers my students face.

The motivation behind FutureTech's much-touted "21st century curriculum" is deeply intertwined with the larger global competitiveness agenda and unfortunately seems to be masking the structural issues (i.e. poverty) by using technology as a band-aid in hopes that it will be used to transcend these inequities. Technology in this space is being used as a vehicle for furthering larger political and economic agendas rather than attacking the cause of these inequities they are suppose to be facing. Evidence of this is further illustrated in the newest research project designed to help accelerate America's efforts to out-innovate its competitors. The project is called, ARPA-ED and is commonly referred to as a "DARPA for education".

ARPA-ED stands for the Advanced Research Projects Agency-Education and its purpose is to seek technological innovations that will supposedly transform educational technology (ARPA-ED, 2012). This objective was inspired by DARPA's (the Defense Advanced Research Projects Agency) role in the development of the Internet. This opens up an avenue for more educational services such as "digital tutors" (Aspen Institute, 2013).

One of the characteristics of 21st century skills has been detailed as the ability to acquire new skills at a rapid pace. This consequently aligns with the IT industry's rapidly changing needs. This relates to the next section under the major category, "Vocationalism" which discusses technology -enabled life-long learning findings.

Technology Enabled Life-Long Learning Redefined

Forces of digital capitalism have caused a shift in the understanding and applicability of lifelong learning. Where once characterized by self-directed learning influenced by a self-motivated appreciation for deepening of knowledge, it is now understood as the need acquire new skills at a rapid pace in order to accommodate the changing IT industry labor needs. It is being used as a tool to prepare students for repeated cycles of corporate induced training catered to the rapidly changing environment of technology industry (Schiller, 2011). Lifelong learning as a concept originated in the 1970s and belonged to education reformers. The idea was that people didn't always have formal educational credentials should be acknowledged for the informal development of skills sets they acquired through experience from their personal lives by seeking out learning on their own. It has been transformed to mean what Newt Gringrich called "the responsibility of the learner" which implies that people need to be adaptable to changing needs in skillsets at any point in their career and master whatever skills the industry comes demands (Schiller, 1999, p.158). The World Economic Forum (2009) further illustrates this when it states, "In particular, today's globalizing economy requires economies to nurture pools of well-educated workers who are able to adapt rapidly to their changing environment" (p. 5). This is linked to the 21st century skills agenda, which encourages innovation and the ability to think critically and adapt to changing technological environments. Conveniently, there are programs and services available to help students acquire these "necessary" skills delivered by private vendors.

A relevant aspect of technology enabled lifelong learning in this study's context pertains to an additional component of this new lifelong learning understanding,

corporate vendors. Vendor participation in K-12 education includes companies that package and sell various educational services both to schools and individuals. This growing involvement of media conglomerates such as, Pearson Inc. is most prominently focusing on data systems and assessment. Schiller (2011) argues that this is just another way of seizing and expanding the education market.

Educators from FutureTech expressed their beliefs that students need to be able to adapt to changing needs of the market in terms of skill. The technology coordinator stated:

Look how I told you about our struggle to keep up with new technologies... the stuff we have now is going to be obsolete soon. Look at what self-check out is doing. It just goes to show how disposable people are now and if these kids don't develop a bunch of different skill-sets to adapt then they won't make it. Technological literacy helps these kids be able to adapt and I just can't stress how important it is.

One of FutureTech's partners is Cisco and they are responsible for the wireless infrastructure and providing training through Cisco Networking Academy. On the company's educational outreach page, its mission champions lifelong learning and quotes one of the companies collaborators, president of the Information and Communications Technology Council (ICTC), Paul Swinwood:

We must get high school students interested in IT careers so they will progress to postsecondary school. We must identify the right courses and the right training for these people so that they then transition to jobs in IT. Getting the students when they are young and putting them through Cisco Networking Academy shows them the fun they can have while learning Information Technology.

Another one of FutureTech's partners is Dell. Regarding lifelong learning and prerequisites for obtaining an IT job, the company's partnerships in education page states:

As a company, Dell knows how important it is for every Dell employee to think critically, collaborate and create. Indeed, every potential new Dell employee is specifically evaluated based on these types of criteria in the interview process. These are pre-requisite skills for every member of the 21st century workforce today.

(Dell Connected Education, 2005)

While Dell's role was not discussed in the interviews, it is pertinent to mention it here since they are listed as a major partner whose mission aligns with these trends that are being revealed.

Aside from the beliefs of the educators aligning with the technology-enabled lifelong learning and Cisco's Networking Academy, evidence of outside vendors and this lifelong learning push was not prominent. However, one of the reasons is because, as mentioned above, these vendors such as Pearson mostly participate in the data systems and assessment side in this context. So this does not mean that these trends of digital capitalism are not evident at FutureTech because indeed, Pearson's, Partnership for Assessment of Readiness for College and Careers (PARCC) exams with which FutureTech served as a field site for this year, is replacing the state's standardized test next spring.

Privatization

There are not many concepts that elicit such antagonistic responses as privatization. When privatization and education appear together, what you get, once again, is a binary opposition including a moral panic on one side and a celebratory response on the other. While there are various definitions of privatization, for the purposes of this study, it refers to the lessening of government control by the expansion of private sector involvement. Essentially, it is the reduced role of the government and

increased control of the private sector (Kishan, 2008, p. 114). Further, this study sees privatization as public taxpayer monies being transferred to private investors.

For clarity sake, this notion of privatization of education is not used to indicate an eradication of every vestige of public education. There are several forms privatization takes and some of the ways we are seeing it being operationalized in public education today is through voucher systems, charter schools and education management companies (EMOs). The rationale for proponents of privatization efforts is that these policies will ignite innovation efforts and competition that is normally curbed by government bureaucracy. Additionally, proponents of privatized education believe that business models allow greater opportunities for productivity and better preparation for competing in the labor markets. The idea is that market logic allows for things to run with greater efficiency than if the government ran them. Unfortunately, there is virtually no evidence to support this logic when applied to education.

Aside from its clear interrelationship with digital capitalism, privatization was identified as a major category because of the sheer amount of times the term privatization appeared in the interview transcripts. Additionally, the elements of privatization, which make up the sub-categories discussed in this section, were also consistently apparent throughout the transcripts as well as the mission statements from FutureTech's IT partners. To be sure, private entities have been involved in American education since its colonial days. Schools actually did not begin to be funded by the states until the 1800s. However, over the past couple of decades, with the proliferation of ICTs, there has been a strikingly rapid expansion of privatization efforts in the American education system. This

has been represented through the significant role played by numerous private tutoring services, EMOs, and commercial software and online learning providers.

In 1999, Merrill Lynch published a report entitled *The Book of Knowledge*, in order to draw private investors to education. The report outlined five main ideas that were purported to transform education in the future (Moe, Bailey, & Lau 1999). The five ideas included: 1) distributed learning, which promotes the “democratization” of education through Internet use and PC technology. 2) Education Portals, which entailed providing education-focused entries to the Internet. 3) Accountability and Assessments. 4) Private Management of Schools, which is premised on the belief that if schools were to run more like businesses then they would be more efficient and lead to hyper-accountability measurements. 5) Increased Teacher Training in technology and other professional development areas (Picciano and Spring, 2013, p.92).

The sub-categories used to organize the presentation of findings in this section align with these five major ideas but modified based on the thematic analysis of interview responses and mission statements. This resulted in the following sub-themes that will be discussed throughout the next section: 1) Hyper-accountability Measures: NCLB and High Stakes Testing Preparation 2) Increased Teacher Training: Professional Development 3) School Commercialism: Supplementary Technology Education Services.

An unintended outcome from the question, “Do you think there are any downsides to these partnerships?” was that all FutureTech educators that were interviewed responded with expressed concern about privatization and high stakes testing. The first teacher, a tenth grade technology teacher, expressed her concern this way:

I think my worry and the only downside is that it starts to lean towards the privatization of schools. I hate to be political but what the Republicans want are charter schools. Then they kick the bad kids out. Where do the bad kids go? Privatization leads to excluding people and then there you go... there goes your equity. That is a big worry for me. I don't want to see our school go more towards this trend than it already is. You know, we don't need these guys saying, "let's pay teachers less. They get paid too much". They just care about saving money. You know, that whole idea like we have here, where these private companies get involved and say, "here is our mission but we really aren't going to be telling you what's going on because it's private and we don't have to". And then the government is less and less involved and that's a bad thing to me because they're [private partners] not out for the public. Who is holding them accountable? No one. They have complete control because we are at their mercy because we have no money. So yeah, privatization scares me with these partnerships. Unfortunately, we don't have a choice anymore.

Similar sentiments were expressed from other FutureTech educators. Surprisingly though, they all spoke favorably of the private partners when asked about the benefits of this model. This will be discussed in greater detail in Chapter Four but the general consensus was that the technological resources that come along with the private partners was a big perk. This was also interesting because of the wireless infrastructure issues that they face posing immense challenges in actually using the hardware.

Hyper-accountability Measures: No Child Left Behind and High Stakes Testing

The controversial debates surrounding privatization of education deepened significantly with the advent of the No Child Left Behind Act of 2001 (NCLB) as it detailed explicit support and encouragement of private sector involvement especially for schools that do not meet the standards determined by arguably flawed metrics. One aspect of high stakes testing as a characteristic of privatization is accountability measures focusing on evaluating the quality of teaching based on students' test results. According to the Bill and Melinda Gates Foundation, high stakes testing is the best way to ensure teachers are doing their jobs and being held accountable for preparing students with 21st

century skills. This model assumes that achievement gaps are caused not by social inequalities or inadequate resources but by the teachers. In 2010, the Bill and Melinda Gates Foundation donated almost twenty million dollars to developing classroom assessment and instructional tools to help educators prepare their students better for excelling after high school (Gates Foundation, 2010). Stated on the foundation's website is an explanation for the investments:

The investments are part of the foundation's support of the effort to build a coherent system of consistent college- and career-ready standards, aligned assessments, and teaching tools to strengthen teacher effectiveness and dramatically improve student achievement.

Bill Gates asserts that standardized testing is the only objective measure for evaluating what students have learned and that test results can be used as indicators for the quality of teaching taking place (Hursh, 2011, p. 45). Regarding initiatives such as Race to the Top, the Gates Foundation mission asserts:

The federal Race to the Top fund gives states powerful new incentives to invest in more robust assessment systems that can provide a clearer picture of student learning and teacher effectiveness.

-Carina Wong, Gates Foundation Deputy Director of Education

Adopting business models for education means that teachers are being evaluated based on output data in the form of test results. The private partners involved at FutureTech are outspoken about their support for high stakes standardized tests. Their philosophy is based on market logic that suggests providing incentives will result in desired outcomes. The premise is that markets are rational and thus predictable. An additional resource that the teachers were appreciative of is the amount of time they get for professional development, which is another trend of privatization.

Professional Development and Increased Teacher Training

One of the trends stemming from privatization efforts is increased professional development and teacher training. As mentioned in the section on vocationalism, one of the founding characteristics of FutureTech is the exorbitant amount of time dedicated to professional development. It was also noted that the school has seen a shift from technology focused professional development where most of the meetings were dedicated to training teachers in how to use and integrate technology into their classrooms to more focus on curating strong relationships between the students and teachers and taking a more social needs approach to professional development. Illustrating this, one teacher remarked:

I think that our school is definitely provides so much support in that way. Not so much from technology but from our student support team, professional development goals. And yeah, all of the grade levels have teams dedicated to helping students deal with the environments they are coming from.

Another teacher commented on this by saying:

There's a lot of work that goes into collaborative umm...team building between the teachers focusing on really following-up on the students to ensure that they are safe to ensure that they're getting messages across the board between all of their teachers.

FutureTech dedicates 257 hours each year on professional development activities including technology related workshops, collaborative planning time, reviewing student data and instructional improvement workshops (Whitehouse.gov, 2011).

When asked how FutureTech differed from other public schools, all respondents emphasized how much more time they spend on professional development compared to traditional public schools. Indeed, this is something that is touted on the school's website. Some examples of technology related professional development at FutureTech includes,

“Hands-on Engineering for the Classroom,” where FutureTech students learn about the science because various engineering activities they participate in and get tips for implementation in the classroom, “LEGO Robotics for Instruction: STEM Focus,” which entails a workshop designed around STEM, and “Using LEGO Robotics for Instruction: ART Focus” which is a workshop for teachers to learn how to design and program interactive kinetic sculptures and artwork. This last Interestingly, the description for this professional development workshop says that this is meant to be applicable to any subject area but especially STEAM (Science, technology, engineering, art, mathematics)³. Coincidentally, private IT companies are also emphasizing professional development heavily. Cisco, one of FutureTech’s major partners states:

In today’s 21st century teaching and learning environments, highly skilled teachers and faculty are the greatest determinant of student achievement. To be the best possible teacher, you need to be a lifelong student. That means participating in regular professional development to stay current on the latest research and trends in education, and sharing best practices with others in the field. Cisco communications and collaboration technologies make it easier, less expensive, and more convenient to participate in these activities, so teachers and faculty can spend more time training, and less time traveling⁴.

The type of professional development that is being emphasized by the private sector was more apparent during the first few years of FutureTech, according to FutureTech educators. However, recognizing the larger social issues that need to be addressed in order for the model to be successful, the school shifted the focus of their professional development to approach these social needs. While there has been this shift in focus, technology is still a large part of the professional development objectives. Efforts are now being directed towards funding searches and new partnerships.

³ <http://bpsengineering.wordpress.com/hs-calendar/teacher-pd/>

⁴ <http://www.cisco.com/web/strategy/docs/education/CiscoProfessionalDevBrochure.pdf>

Many claim that one of the primary reasons private companies are such avid proponents of standardized testing is because it opens the market for supplementary education services that allows for companies to make a profit. Professional development tools are another way to expand the education market. Again, referring back to Cisco's education mission statement, they state:

Together we can extend professional development beyond traditional in-service events and sustain the professional development experience with virtual classrooms, online content sharing, and professional learning communities.

Demonstrating government support for the private sector, the Obama Administration created launched the *Educate to Innovate Initiative* in 2009 with the objective to train teachers specifically in STEM by encouraging IT companies to get involved in schools through distributing professional development services. On the initiatives main page through Whitehouse.org, a quote from President Obama appears:

One of the things that I've been focused on as President is how we create an all-hands-on-deck approach to science, technology, engineering, and math... We need to make this a priority to train an army of new teachers in these subject areas, and to make sure that all of us as a country are lifting up these subjects for the respect that they deserve.

-Third Annual White House Science Fair, April 2013

Further supporting the expansion of private sector involvement that is creating a dependency is the following statement from the *Educate to Innovate* page:

Together, they recruited over a 100 other CEOs and in September 2010 the President helped launch *Change the Equation*⁵, a new non-profit with full-time staff dedicated mobilizing the business community to improve the quality of STEM education in the United States.⁶

As already made evident throughout this chapter, one of the apparent trends spawned by forces of digital capitalism that the opening and expanding of the education market to the

⁶ <http://www.whitehouse.gov/issues/education/k-12/educate-innovate>

private sector. Another prominent role that the private sector plays in education is through supplying supplementary technology education services. Being built from the ground up through an IT industry-led public private partnership it should be no surprise that FutureTech is often used as a field site for testing out new supplementary technology education services.

School Commercialism: Supplementary Technology Education Services

The following statement from the U.S. Office of Technology Assessment exemplifies the trend of school commercialism, which is driven by forces of digital capitalism.

New profitmaking institutions are emerging to provide education. To compete in this growing and increasingly segmented market, many traditional educational institutions may have to curtail some of the services that they provide, retaining only those that have the greatest economic and political return. Changes such as these are, in fact, already occurring in almost all sectors of the educational system.

-U.S. Congress, Office of Technology Assessment (1982)

Towards this effort, each of FutureTech's private partners distributes supplementary technology education products and services. Through the interviews conducted with FutureTech educators it was found that FutureTech is often used to pilot new products. Some examples of these services include Google making FutureTech a pilot site for different technology applications that focus on sharing student work and enhancing communication, another example is IBM supplying the school with information management software.

As indicated, IBM is another one of FutureTech's IT partners. Their role has including donating hardware and supplementary instructional services through their

Academic Initiative, Cloud Academy. In reference to their supplementary instructional and training services for their education partnerships, their site says:

Whether you are teaching computer science, information technology, business, or marketing courses, IBM offers a wide range of products and solutions that can help you enhance your curriculum and enable your students to develop competitive skills on the latest industry-standard software, systems, and tools.

Connecting the previous findings on the development of 21st century skills and school commercialism findings, IBM's Academic Initiative welcome page highlights a new resource for teachers:

Give your students access to industry-leading tools for them to develop skills so they can manage cross-channel marketing campaigns and they can empower customers with robust shopping capabilities to quickly find the right products using any device. Explore our newest teaching topic: Commerce, marketing, and supply chain_(IBM, 2014).

The interview data did not provide many details about these supplementary services. The only information that was shared about these services were implied through the professional development workshops and the examples one physics teacher gave that was discussed earlier in the vocationalism section, about him bringing in an outside company who recently tested new products out on the students.

It was also noted that Microsoft hosted development workshops in the school's first two years but this was no longer the case. However, despite the loss of Microsoft endorsed supplemental services, the other examples discussed throughout this section indicate that the presence of supplemental technology education services is still prominent today. It is clear that supplemental services and products are not the only way for private interest groups to get their hands in the education sector. Corporate social

responsibility (CSR) movements have helped open the door through what is sometimes referred to as techno-venture philanthropy.

Techno-venture philanthropy

As previously outlined in chapter two, Techno-venture philanthropy or technocapitalism as it is sometimes referred to, is one of the most prominent ways private companies are accessing the education sector and is often described in vague and shifting terms. As a major category that was predetermined based on it being a major component of digital capitalism, this study promotes its understanding as technology-driven corporate philanthropy where private companies donate money and/or technological resources to underserved schools. In this case, as previously outlined, FutureTech's IT partners have donated a variety of technological services and other resources to the school in part to further their corporate social responsibility (CSR) efforts. The phenomenon is tied to broader political-economic processes. Some claim, "this new generation of billionaire private funders was spawned by the technology revolution of the 1980s" (Klonsky, 2011, p.21). This "technology revolution" was propelled by deregulation policies.

Techno-venture philanthropy is significant to this study for a variety of reasons but perhaps most apparent is that it is recognized as a major trend of digital capitalism. The private sector involvement in the FutureTech model is recognized as a philanthropic effort. The Bill and Melinda Gates Foundation, founded in 1994, is the world's largest philanthropic organization (Hursh, 2011, p.39). The Gates Foundation, FutureTech's primary private partner, outlines the foundation's guiding principles on its website. The principles detail that the foundation is "driven by the interests and passions of the Gates

family” and “the primary aims of the foundation are, globally, to enhance healthcare and reduce extreme poverty, and in America, to expand educational opportunities and access to information technology”(Gates Foundation, 2014). Unsurprisingly, in addition to social good, Bill Gates is a fierce advocate for techno-venture philanthropy to serve as a business strategy. At the 2008 World Economic Forum Bill Gates, “creative capitalism can and should help solve the world’s hunger, disease, and poor schools by building social capital into investments into profitable business enterprises” (Klonsky, 2011, p. 24). The themes that arose during the analysis of interviews, news articles, and IT partners’ mission statements are used to organize the presentation of the findings below. The two sub-categories of techno-venture philanthropy include:

- Techno-fix: an appropriate or misguided solution?
- Concerns about democracy

Techno-Fix: an Appropriate or Misguided Solution?

The primary paradigm in education reform today concerns debates about technology being used as an all encompassing equalizer and ameliorator of all social, economic, and political tribulations. Indeed, this logic is responsible for the proliferation of ICT-related education reform initiatives. The purpose of this sub-section is not to present an answer to whether or not technology is the appropriate solution or not. This section will simply present what educators from FutureTech had to say about technology being employed as a solution and what the IT partners say about technology as an equalizer. Chapter Five will engage with the implications of these findings and argue that technology has the potential to improve equity in limited forms and empower students in several ways but the solution to the crises that public schools including FutureTech faces calls for a much more grounded, low-tech resolution.

The sixteen relevant news articles that were analyzed all celebrated the FutureTech model and credited its successes by touting the promises of technology. These celebratory perceptions do not reflect that of the majority. There is an abundance of scholarship, blog posts, news articles, etc. available that represents the various positions held on technology as a solution across the spectrum. The educators' from FutureTech similarly reflect the variety of positions held on this topic.

Comments from FutureTech educators resulted in mixed feelings about the use of technology as a solution for inequities. All of them made it adamantly clear that technology cannot stand alone in conversations about solutions to social inequalities and student achievement gaps. They are also all in agreement that adequate access to technology and mastery of technological skills are absolutely necessary and without it, their students would fall further behind not just in school but in life. Related to this, several respondents stated that this was the benefit of having private sector involvement. They are the ones who can provide those resources for them. When asked the question, "what do you see as the benefits of having these private partners?" one teacher responded,

Well, they are the ones who provided the computers to begin with and invested in the school. They are the ones who kept programs running like the afterschool programs, like the robotics program, you know. People use to come in and speak to the kids. To me, that money is essential because they need that. We have drifted away from this but I think we are going to get back on track and get back to the mission of the model.

While there was general consensus among the FutureTech educators that technology was not the solution to the problems the school and the students face, as mentioned above, it was widely acknowledged that technology was a necessary component of the equation for solution. The technology coordinator put it this way:

I mean, especially working in an urban setting...you're up against a lot because you know, if you think about a place that has kids, like my own kids for instance, live, we can afford to buy a laptop, they have laptops at home where these kids don't have that. We have Internet service. These kids don't. I mean, when you think about the achievement gap, it's also now not just reading and writing, it's also technology. It has to be there.

After the teachers and principal expressed their concerns about taking a solely technology-centered approach as a solution to the various challenges they face, I asked why they thought this was problematic and it was through this follow-up question that revealed a consistent consensus among all interviewees that poverty, nothing else, was the dividing line and technology cannot be used to cure poverty. All respondents believe that if poverty were eradicated then all equity issues and challenges faced by schools would be solved. Supporting this argument, Diane Ravitch made the claim in a recent interview with Bill Moyers that “nearly 25% of U.S. students live in poverty and this is the real problem that public schools are dealing with” and further argues that the reasons schools are in trouble is because the communities that they are embedded in are in trouble⁷.

Another consistently expressed concern about what was perceived as the problematic governance and implementation processes of these ICT-led education initiatives such as their own FutureTech mode dealt with the disembeddedness of these venture philanthropists. There was apparent frustration among the teachers from FutureTech regarding this issue. What is meant here, essentially, is that the private business owners who have significant influence over reform policies and implementation of these initiatives are not knowledgeable on what is actually needed for schools to help

⁷ <http://billmoyers.com/episode/public-schools-for-sale/>

students thrive because they are disengaged from these contexts. One teacher expressed it this way:

The issue is that private entrepreneurs come in and think they have all of the solutions and we have to listen because they keep us going but the truth is, they have no clue. They are not teachers. They are against teachers. They just have no clue.

This is a well-observed concern in the education sector and reflected in education scholarship. Diane Ravitch expressed similar sentiments in the same interview with Bill Moyers by making the claim that most of these ideologues or billionaires have never attended public schools. The Walton family, owners of Wal-Mart and one of the leading private investors in education, for example, are often targeted on the basis that they are not socially, politically, or economically in the communities where their education reform initiatives take place. These communities are similar to FutureTech in that they are low-income, urban areas where the students are mainly children of color. This is a direct contrast to the Walton's who are white, moguls from a rural area background.

Not surprisingly, FutureTech's IT partners are the major proponents of technology-driven solutions to equity issues and for closing achievement gaps. The following are excerpts from each of FutureTech's major partners' websites that detail their view on using technology to fix the issues faced in public education.

IBM: "Human ingenuity and effort are key factors in addressing the world's challenges. But technology can play a critical role too. Where possible, IBM identifies opportunities to directly apply its technology and expertise to problems facing local and global communities" (IBM CSR Report, 2010).

Cisco: We believe the core of an excellent education system is based on talented teachers, strong system leadership, solid curriculum, and accountability for outcomes. However, another key component is the integration of technologies that can fuel new forms of teaching and learning, nurture 21st century skills, and prepare learners for participation

in the global economy of this century

-Tae Yoo Senior Vice President, Corporate Affairs

However, this last example from Cisco demonstrates that, just because the companies are overtly celebratory and optimistic about the power of technology to alleviate inequalities does not suggest that they believe it is the sole factor in ameliorating these issues.

The findings pertaining to technology centric approaches to alleviating existing inequalities and other challenges facing FutureTech suggest that it is widely understood that technology does have the potential to help provide certain opportunities that can have a great social impact such as gaining proper technological skills that can allow these students to obtain IT related jobs. However, it is equally understood that technology is not the answer to existing inequalities and that unless these structural issues causing the inequities in the first place are addressed then the perpetuation of these inequities will continue. In sum, technology is a necessary resource but it cannot be treated as all encompassing equalizers with the potential to transcend the underlying issues of poverty, which need to be fixed for the promises of technology to be realized. One of the most prominent promises of technology that is often talked about is its democratic potential.

Concerns about Democracy

Education is widely recognized as one of the major foundation stones of American democracy. Therefore, when there are concerns about democracy being undermined in public education, it warrants serious examination. It is clear by now that private sector involvement in public education raises many concerns for public stakeholders. One of the prominent concerns made apparent by the existing debates outlined in the literature (see Chapter Two) and further supported through speaking with FutureTech educators is that this involvement of private partners threatens democracy. To

reiterate, the threat to democracy in this context might be how private partners are exercising top-down control over implementation of technological integration and curriculum development that works to weaken the voices of students, parents, educators and citizens in order to serve private interest rather than the public good. It is especially apparent in models like FutureTech because the private partners are involved from their inception meaning they have heavy influence on objectives and organization of the schools. These threats to democracy concerns were expressed in the context of influence over education policy, less impetus to serve the public good, and no accountability.

Private Sector Influence Over Education Policy

One of the major concerns related to threats to democracy is the private sector's influence over education policy. As discussed above, this was expressed in the interviews through a discussion on the disengagement from public schools of private actors pushing these initiatives and determining what is most appropriate for reform policies. This is widely recognized and supported throughout the existing literature. For instance, Saltman (2011) notes:

Bill Gates is part of a small group of omnipotent private foundations that currently play a disproportionate role in driving national public education policy. Virtually free from any government oversight and accountable to no one, the power philanthropists leverage multibillion-dollar reserve funds to drive a conservative agenda and threaten many areas of public life and public decision making (p.23).

This small group of “omnipotent private foundations” that Saltman is referring to includes each of FutureTech's major partners: Apple, Microsoft, IBM, Dell, and Hewlett Packard. The net-worth of these companies is correlated to how much influence and power they can have. This supports arguments made about the trends and impacts of digital capitalism is complete corporate take-over of public institutions. This is

exemplified through the following assertion, “as the largest foundations control ever larger concentrations of private wealth, their power over public institutions also grows larger” (Klonsky, 2011, p. 21).

Undermining the Public Good

Another expressed concern from FutureTech educators is that the private partners are not looking out for the public good. As stated in Chapter One, education is understood as a public good that is characterized as being publicly owned, funded, and operated. The goal of serving the public good is understood as benefitting the society. With private companies primary objective being to gain profits, it would seem that the public good and private interests are at odds with one another.

Many claim that CSR in the realm of education is a ploy for the private sector to become further entrenched in public education and gain control in order to completely seize the market and further their capitalist interests. Supporting this is the following claim:

In his book *Supercapitalism*, Reich makes the case that the current appeal to corporate social responsibility is directly related to decreasing confidence in our democracy’s responsiveness to the common good” (Klonsky, 2011, p. 33).

In order to assess how these companies are serving the public good, there is a need for some sort of accountability measure. While there is a growing resistance movement that is campaigning for these measurements, there is currently no such metric that exists. This lack of accountability presented itself as another major concern of FutureTech educators.

Lack of Accountability

As a result of high-stakes testing initiatives such as Race to the Top and No Child Left Behind there have been massive teacher lay-offs across the country. Surely this is

not purely due to the high-stakes testing but it does give states who are hurting economically an excuse to do major layoffs. For example, California's economy is one of the worst off in the country and coincidentally, it has seen the most teacher job losses in America (VOA News, 2011). The high stakes testing movement acts as a form of accountability on teachers because the test results are suppose to reflect the effectiveness and quality of teaching taking place. The concern now is how private companies are being held accountable. The teachers at FutureTech all discussed their frustration with these hyper-accountability measures being placed on them but that the companies investing in these ICT related reform initiatives are not being held accountable. One teacher expressed her frustrations with the lack of accountability this way:

There is no way to hold them accountable. But the thing is, they don't have to be held accountable. They've got all of these loop holes and that's scary. It's like, what is their real intent? Are they really invested for the right reasons? Or are they using this as an opportunity for something else? It's just scary.

While FutureTech's IT partners do not discuss how they are being held accountable or accountability measures for their own social responsibility efforts there has been a form of resistance or activism targeting these companies by attacks found either on company websites or through other forms of social media where the letters then go viral. One example found was a letter written to the Gates Foundation earlier this year by Matt Reed who is Vice President of Academic Affairs at Holyoke Community College in Holyoke, Massachusetts. His letter made circulated widely and gained a substantial amount of attention. This could have significant consequences for these companies' public image.

A couple of the interviews revealed that other resistance measures taking place include stakeholders proposing CSR standards and performance measurement tools.

Another issue that was brought up in terms of accountability was that of transparency. One teacher expressed her frustration with the lack of transparency not only concerning their role at FutureTech, which aside from the technology coordinator and principal, no teacher that was interviewed could speak to, but transparency in their objectives or motives in education in general. She stated, “that whole idea like here is our mission but we really aren’t telling you what’s going on because it’s private and we don’t have to”.

Furthermore, private companies are interested in eliminating due process for teachers making it so teachers can be let go for any reason without explanation. Perhaps the poster child example where these concerns are legitimized is the American Legislative Education Council (ALEC). Diane Ravitch (2014) explains that ALEC is a nonprofit organization that recognizes itself as “a nonpartisan membership organization for those who share a common belief in limited government, free markets, federalism, and individual liberty”⁸. Diane Ravitch discusses ALEC in terms of accountability concerns and states that they are unapologetic about their “what we do is our business” philosophy (Diane Ravitch and Bill Moyers Interview). In terms of accountability, ALEC’s philosophy is clearly at odds with this notion and is further demonstrated by their push for the elimination of auditing policies.

In her 2011 book, *The Death and Life of the Great American School System*, Diane Ravitch clearly articulates and synthesizes these concerns of Techno-venture philanthropy in education in the following way:

These foundations, no matter how worthy and high-minded, are after all, not public agencies. They are not subject to public oversight or review, as a public agency would be. They have taken it upon themselves to reform public education, perhaps in ways that would never survive the scrutiny of

⁸ <http://billmoyers.com/episode/public-schools-for-sale/>

voters in any district or state. If voters don't like the foundations' reform agenda, they can't vote them out of office. The foundations demand that public schools and teachers be held accountable for performance, but they themselves are accountable to no one. If their plans fail, no sanctions are levied against them. They are bastions of unaccountable power (p. 201-202).

The amount of financial resources that these companies have can be used to influence educational public policy issues, which marginalizes the public stakeholders' voice and role in the decision-making processes. This is the threat to democracy that the FutureTech educators are concerned about.

In terms of the mysterious disappearance of the Gates Foundation role at FutureTech, what is happening echoes the destructive impact results from the community-based small-schools movement for high school reform in the 1990s. The concerns expressed here regarding techno-venture philanthropy were also made apparent in this small schools movement like FutureTech. In support of this assertion is an explanation of what happened with the small-schools initiative:

This movement initially received major foundation support that provided fuel and energy, and then, as suddenly as it had supported reform, the philanthropies abandoned it or imposed undemocratic control mechanisms, top-down mandates, arbitrary timetables, and inappropriate business models of replication and accountability (Klonsky, 2011, p.25).

Overall, these findings presented the concerns expressed, which can be synthesized as evidence of a shrinking public sector fueled by budget constraints causing more dependency on private funding, which ultimately means a shrinking public voice. Furthermore, lack of accountability for the private partners has FutureTech educators worried and frustrated as the high-stakes testing policies pushed by these private actors are acting as hyper-accountability measures and have had alarming consequences for teachers. Moreover, the amount of financial resources belonging to these companies has

given them more influence in the policy making process and as asserted earlier in this study, this is concerning because private interests are at odds with those of the public thus posing a threat to democracy.

Overall, claims were made with the assertion that these techno-venture philanthropic efforts are fueled by the prevailing public mythology that the public education system in America is failing. In 2008, Bill Gates gave a testimony before the Committee on Science and Technology, U.S. House of Representatives and stated that he wished for a “fluid supply of foreign technical labor to be brought in the U.S. to work for companies like Microsoft” (Klonsky, 2011, p.31). He went further to suggest that the U.S. public education system is responsible for this increased reliance on foreign labor because it is incapable of turning out competent engineers and scientists (Klonsky, 2011). Ultimately, these findings suggest that more targeted and grounded policies are needed in order to determine the unique needs, history, and condition of the FutureTech community if real structural changes are to take place.

On the one hand, many schools have found reprieve through the likes of corporate philanthropy, which without it, in a time of immense budget cuts for public education, would render them inoperable. However, what we are seeing here is increased dependency on private sector, increasing their power to control public education, a result of digital capitalism. In a democratic society, everyone should have access and a right to education, and not just that, but an education that sits within the public domain with a high degree of public decision-making and public accountability.

Privatization Summary

Schools are being starved for revenue due to the economic downturn. This has been demonstrated through the significant budget cuts to public education and mass layoffs of teachers across the country. This has created a dependency on private investors in order to keep schools afloat, which has propelled privatization efforts.

The following statement found on IBM's Cloud Academy site sufficiently illustrates the current privatization trends we are seeing in public education today:

For educational institutions, the mandate is clear: Reduce costs and optimize services while making information available and secure whenever and wherever it's needed. Consolidate resources. Improve student success. Accelerate scientific discoveries. Add administrative efficiencies. Conserve resources. These are among the challenges that cloud computing can help schools and universities address, and that shape the agenda of the IBM Cloud Academy.

Ultimately, as privatization agenda progresses there is concern that the future of education in the U.S. will reflect complete business models. This implies that those who can afford it will receive the best services and be able to attend the best schools. This results in the solidifying the long-standing asymmetric power relations and tiered services that render those already disadvantaged in a worse position. An example of this as it relates to digital capitalism can be seen in the recent net-neutrality decision that has opened the door for a two-tiered Internet market having considerable implications in terms of class. Those who can afford to pay for faster speeds will get information quicker than those who cannot.

Summary of Findings

Engaging with the first research question driving this study that seeks to understand how digital capitalism is evident at FutureTech, the findings revealed that

forces of digital capitalism are evident at FutureTech in several ways. One of the impacts of digital capitalism in education is a shift in curriculum design that caters more directly to labor markets. The structure of the FutureTech model and its mission reflects this trend in that classrooms were supplied laptops for each student and various sorts of technological hardware in order to support a technology-driven curriculum.

FutureTech was set up with the primary objective of ensuring students are acquiring the necessary “21st century skills” needed to excel or even participate in today’s labor market. The findings exposed that the instructional and learning design processes have been heavily influenced by the private companies’ related foundations, particularly the interests of the Gates Foundation for FutureTech. The mission states that they are equipping students with the tools to acquire the necessary skills to be hired by IT companies such as Microsoft. This directly reflects the trend of vocationalism and loss of autonomy in the learning and instructional processes as a characteristic of digital capitalism. However, it was discovered that the companies did not impose any implementation standards aside from using the technology in every class. In the early days of the school, there was more professional development oriented towards training teachers in using the technology with one of the sources being Cisco’s Networking Academy but technologically centric professional development dissipated after the third year, according the school’s principal.

In the context of 21st century skills agenda, another major trend influenced by digital capitalism, it was noted that this agenda was initiated under the premise that there are not enough qualified students for technology-based jobs in the United States. This is a position that the private partners hold and argue for in their mission statements.

Opponents to this suggest that this is just an illusion and the movement actually serves to narrow the focus of education to mere job preparation and to further the United State's position in the global economy. The educators from FutureTech held consistent beliefs with one another that suggested they believed the IT companies when they said that the reason for them hiring oversees is because the students from the U.S. are not equipped with the proper 21st century skills. With that being said, the English teacher I spoke with expressed frustration with the emphasis being placed on STEM related curriculum and said that schools need to cultivate the entire individual including the creative and artistic aspects. Overall, in terms of 21st century skills, both the private partners and educators were in agreement with one another on the importance of developing these skills in order to make it in today's labor market.

Another hallmark of digital capitalism in education is increased professional development in the form of technology training and other vocationally specific training programs. Arguably, one of FutureTech's most commendable features of its model is the amount of professional development hours they have. As mentioned above, in its earlier day there was a substantial amount of professional development directed at technology training and how to incorporate technology into the classroom but now the professional development hours are spent discussing and planning how to tend to individual students' needs in terms of how to help them balance their home lives and school lives and cultivated strong relationships between teachers and students. Two interview participants did say that the school does dedicate a certain amount of professional development meetings towards discussing grant opportunities and expanding partnerships but this has taken more of a peripheral role.

In terms of lifelong learning, there is pressure being placed on teachers to ensure that their students are acquiring critical thinking skills and are able to gain skills quickly making sure they are adaptable to changing environments, which reflects the constant evolution and increasing demands of a variety of skills needed by the IT industry. This shift in meaning, it was found, opened up the market for commercial vendors to seize and expand upon by providing supplemental educational services. Aside from Dell's Connected Classroom program, this was not so prevalent at FutureTech. However, it was revealed that a Pearson Education-designed exam (PARCC) is replacing the state's standardized testing for which FutureTech served as a field site.

As a result of deregulation, these IT companies have obtained more power in shaping policies by virtue of their ownership of the infrastructure (Kovacs et al, 2011). Because of this, governments have been forced to turn to private companies in order to achieve education goals such as integrating technology into every classroom in order to promote the need for 21st century skills. Without government funding for these initiatives, underserved communities would be further disadvantaged because there would not be strong enough market-incentive for these companies to provide the infrastructure. Concurrently, due to budget cuts, schools are being starved for revenue causing an increasing dependency on private sector funding. As stated throughout this study, budget constraints have resulted in a rapid rise in public private partnerships in education. This is supported and further illustrated by Schiller (1999) when he states:

In this rapidly changing and consistently difficult context, administrators bruted a standard set of institutional strategies. One was a much-vaunted New Partnership with industry. By 1986, in an unprecedented "cooperative boom," the number of joint ventures between industry and academe reached "all-time highs" and embraced "large and small

businesses, public and private colleges, major research universities and local community colleges in every state (p.161).

It was noted that one of the primary ways the private sector enters directly into the public education market is through venture philanthropy or what was identified here as techno philanthro-capitalism. These private partners set out with an intension to ameliorate existing inequalities by providing access to technologies. While the findings here revealed that the companies are well-aware mere access to technology will not suffice in assuaging these inequities, there also does not seem to be attempts at engaging with the root-cause, which at FutureTech was identified as poverty.

The general consensus from the educators at FutureTech that while supplying technology as a resource is necessary, it acts as a mere band-aid on a substantial underlying problem that needs to be fixed first in order to make sustainable changes. Additionally, when asked about the perceived motives behind FutureTech's partners being involved, the responses were divided. The principal and technology coordinator believed that there exists a dual-incentive, which is to contribute to the social good and get tax breaks. Others believed that they were merely interested in improving their public image. The remaining informants said it was probably mixed between corporate social responsibility, positive public image, and profit with profit being the central concern. All of the informants expressed seemingly contradicting beliefs when it came to overall perceptions of private partners involved in education. They all said that they are concerned about privatization and private companies having too much influence in how and what is taught but at the same time they expressed that the private partners could inspire the students and the resources they bring are invaluable.

Speaking of these resources, another aspect of digital capitalism at FutureTech

that was discussed was the notion of supplemental technology education services. Each of FutureTech's partners have supplementary services they sell to schools including professional development sponsored workshops and instructional modules to integrate into the classroom. One of the things that set FutureTech apart from other public schools is the amount of time dedicated to professional development. It was revealed that there has been a shift in focus from technology oriented development meetings to more socially oriented focus to come up with ways to help these students transition back and forth from difficult home lives to school and sharing student data amongst each of the students' teachers to curate more mentor/mentee relationships to act as support systems.

However, despite this shift in focus, technologically centered professional development workshops and meetings still take place. Some of those examples included, using LEGOS for robotics, physics and STEAM related course areas. A review of the mission statements from FutureTech's private partners revealed that there is a strong push for these supplemental services to be integrated into the classrooms. Schiller (1999) spends time discussing how this phenomenon is being propelled by forces of digital capitalism. He refers to observations made from IBMers that asserted that this use of computers and networks in education and training has just begun (p.171). This is apparent in the FutureTech model demonstrated by the sheer amount of time dedicated to professional development and supplemental services and products being used. Supporting this evidence of digital capitalism today, we can refer back to Schiller's *Digital Capitalism: Networking the Global Market System* (1999) when he states, "network systems offered means of delivering standardized instruction cost-efficiently to multiple sites, thereby enhancing the productivity of the educational enterprise" (p.171). The terms,

“efficiently” and “productivity” are common in the privatization discourse, which was another characteristic of digital capitalism and a major theme that this chapter engaged with.

In terms of privatization, the National Education Technology Plans argues that public education needs to adopt practices from the business sector in order to increase student achievement and labor market preparation productivity. Perhaps unsurprisingly, the companies mission statement’s all presented similar attitudes with either an underlying or direct promotion of privatization. They all support the expansion of charter schools and present the argument that if schools were to run more like businesses then they would be more efficient and productive in terms of preparing students for the labor market and closing the achievement gaps.

The private partner’s believe that student achievement can be accelerated through standardized curriculum and high-stakes testing. This emphasis on productivity seemed to be at odds with the FutureTech educators’ sentiments that all argue that high-stakes testing is ruining the public education system and misses the real issue. Furthermore, the metrics for evaluating student achievement are misguided and do not actually measure what is learned or the critical thinking skills acquired. One of the major issues one teacher had was that standardized testing is flawed and claimed that if these companies truly cared about underserved groups and individualized learning then they would recognize you cannot compare students from affluent and privileged backgrounds to those who face poverty and trauma each day. Ultimately, these companies tout technology for its ability to individualize teaching based on specific needs of learners but this contradicts their push for standardized curriculum and testing.

From a Gramscian perspective, some would argue that educational philanthropy is a ploy by private companies to gain control over the education sector not just for expanding their markets and maximizing profits but also in reinforcing hegemonic ideologies that are in line with private interest by gaining control over the curriculum design process (Robertson, 2010; Mosco, 2004; Schiller, 1999). This aligns with the idea of structuration. Structuration is the constitution of social structures through agency (Mosco 2009, p.190). This entry point from the political economy of communication emphasizes that structures place constraints on individuals through economic, political, and cultural power. It is through structuration, Mosco argues, that hegemonic control is sustained. If private interests are being used to guide the organization and governance of education, then public private partnerships are working as vehicles for the extension of hegemonic ideologies that align with private sector values. We can now see how this is also influencing the overall restructuring of the education system.

Since deregulation, private companies (IT companies in this case) have gathered more power when it comes to shaping policies by virtue of their ownership of the infrastructure (Kovacs et al, 2011). Because of this power, governments have been forced to turn to private companies in order to achieve education goals such as connecting all schools to the Internet⁹. Without government funding for these projects, rural areas and other underserved communities would not have access because there would not be strong enough market-incentive for companies to provide the infrastructure to such a small population. This runs counter to the belief that deregulation results in greater economic and social welfare. While deregulation in some

⁹ The most recent ICT related education initiative is President Obama's ConnectED initiative that aims to connect every school in the U.S. with high-speed, upgraded broadband and training programs for teachers. See http://www.whitehouse.gov/sites/default/files/docs/connected_fact_sheet.pdf for further details.

aspect may result in greater economic and social welfare, the problem is that the distribution of that economic and social welfare is incredibly uneven meaning that those at the top of the food chain are probably made much better off by deregulation.

The literature suggests that proponents of a deregulated IT sector argue that when it comes to information technologies, private companies provide and run it better. They are the innovators, they own the infrastructure, and they can make changes efficiently and at relatively little cost to taxpayers. For these reasons, they argue, it is a necessary part of IT policy to have private companies involved (Dunleavy et al., 2001; Contini et al., 2009; Falch, 2010). Opponents to a deregulated IT sector argue that information technologies are a necessary good, and the emphasis put on the development of 21st century skills as a prerequisite for opportunities as it relates to social mobility and success in the labor market, supports their argument. So when things are privatized via free market ideology, this access gets further and further from being a reality because it goes against profit maximization (Savas, 2000). This is disconcerting for marginalized groups because without state intervention, private companies will not have the incentive to provide access to underserved communities, including the schools in those communities.

The next chapter presents findings from archival data and interviews in an attempt to assess the social impact of the FutureTech model. It is serving to fulfill this study's second objective and helps achieve this by presenting questions that need to be answered and suggestions for policy makers.

CHAPTER 4

BENEFITS AND LIMITATIONS OF THE FUTURETECH MODEL

The amount of policy oversights resulting in ineffective and unsustainable policies is truly surprising. Many do not realize the dire consequences these oversights can and do have on the policies' targeted groups. It has long been understood that education correlates with life prospects and this is further complicated by the nearly ubiquitous nature of ICTs because of the economic and political clout attached to these technologies. This makes ICT related educational policy oversights perhaps the most impactful in terms of social, political, and economic equality. It is critical that these oversights and consequences are illuminated so that more beneficial policies can be created. It is equally crucial to gain an understanding of how these interventions are connected to larger social structures and historical processes to better determine their consequences for certain groups.

As discussed in Chapter One, this study has a dual-purpose of extending scholarly discussions and theory making regarding technology and inequality as well as an applied objective to inform ICT related education reform policy-making. Regarding the latter objective, the purpose of this chapter is to present the findings from all of the study's data sources (interviews, news articles and relevant press release documents, and archival data from the Department of Education) that relate to the second main research question, what are the signs and perceptions of the benefits and limitations of FutureTech's collaborative IT industry-led education model for FutureTech students? The benefits and limitations in this question refer to academic achievement and overall social impact (i.e. improved life prospects).

Before the findings are presented, this chapter will start by providing a review of the methods of data collection and analysis. After the findings are presented, the chapter will include a brief discussion on further questions that need to be investigated. Finally, the chapter concludes with proposed suggestions for policy makers including possible alternative approaches that may lead to crafting more sustainable and beneficial ICT education reform initiatives. The larger theoretical and overall broader implications of these findings are discussed in conjunction with the findings from Chapter Three in the final chapter.

Review of Data Collection and Analysis

The following findings presented came out of the thematic analysis of interview transcripts that was outlined in Chapters Two and Three. In order to approach this question regarding the benefits and limitations, special attention was paid to responses to the following questions:

- What does FutureTech offer over other public schools?
- What do you see as a benefit of technology-driven curriculum?
- What do you think the privileges are to having IT industry partners?
- What is the role of the corporate partners in terms of services, hardware, instruction etc.?
- Do you believe that these students have an advantage over others because of the exposure to technology they are getting?
- Are there any technology-centered events within the school?
- Do you see any downsides to these partnerships?
- Have you seen an improvement in the students' academic performance since you began working here?
- If you have taught somewhere else, do you see a difference in the students' academic performance (development of critical thinking skills, writing abilities, comprehension, etc.) here at FutureTech to those of the other schools you have taught at?

These questions all work to highlight the various benefits and limitations pertaining to the FutureTech model. The responses to the above questions help in the assessment of the various social impacts coming out of this model.

Sixteen related news articles and press release documents were also analyzed based on benefits and limitations categories and themes that came out of the informants' interview responses. Paradoxes that arose were further investigated through follow-up interviews with the technology coordinator and another teacher who also acts as the grant-seeker for the school and committee member on the partnership planning board.

After converging the interview and document analysis data, the findings were cross-analyzed with the archival data in order to try and gain a more holistic understanding of what is happening at FutureTech and the impacts of this model on student achievement and improved life prospects. The following table outlines the categories and years for the archival data that was collected.

Table 2: Data collection

Data Source	#	Data Collection Method
FutureTech Educators	8	Semi-structured phone interviews 4 Follow-up interviews Transcriptions (163 pages) Memos
Documents	16	10 Press release articles 6 news articles Google search
Archival	6 Indicators 13 annual reports	All indicators collected for School/District/State and cross-compared. SAT scores Standardized test performance AP performance Attendance & Graduation After Graduation Plans

Another reason the archival data is important, even after recognizing the limitation of the measurements, is because these are the same metrics used by the government and private companies when assessing the effectiveness of schools and is used for determining grant information. The limitations are detailed further in the “suggestions for policy makers” section of this chapter.

Indicators and Perceptions of Benefits and Limitations

The findings presented here are organized by two major categories that include academic achievement and social impact. Additional findings on general benefits and limitations that arose in the interviews are also presented. How each of these is defined and significant are first explained followed by the presentation of findings for each category.

Assessing Academic Achievement

Regarding assessment of FutureTech’s model and academic achievement, the analysis and presentation of findings are based on the same metrics used by the DOE and private investors. For this reason, the findings presented for impact on academic achievement are organized by:

Standardized Test Scores

- SAT Scores
- Advanced Placement Scores
- Overall Student Growth Measured by Annual Comparisons across State Standardized Test Scores

General Indicators

- Attendance Rates
- Graduation Rates

Having recognized the rigid, arguably reductionist, and limiting findings from statistical measurements, information from the interviews are interwoven throughout the presentation of archival data as a supplement and to combat these limiting factors. These statistical indicators alone do not account for the specific needs of these students. For example as supported by one of the teachers from FutureTech, these students face trauma at home on a daily basis and are expected to be tested and assessed based on the same measurements of students who have stable home-lives.

The social impact assessment section puts more emphasis on the qualitative findings by focusing mainly on the interview responses to the question outlined above. The archival data presented here covers after high school plans, which includes how many students planned on attending college (four year private, four year public, two year public, two year private) the year following graduation and how many students each year were going straight to the workforce or joining the military. Before presenting these findings, it is crucial to note the challenges and limitations of social impact assessment.

Assessing Social Impact

Attempting to assess social impact in any realm presents many challenges. Social impact assessment entails the process of assessing the social consequences following a specific initiative, intervention, or policy action (Association for Social Assessment, 1994). Like almost every other crucial term defined so far in this study, social impact is an amorphous concept with various definitions largely dependent on its context and who is defining it. Drawing from the definition provided by the Interorganizational Committee (1994), this study understands social impact to include all social and cultural (necessarily including political and economic) consequences to any group of people of any public or

private actions that influences the way people live, work, play, and generally “cope as members of society”. Potential social and cultural consequences entail altering of norms, values, and beliefs of individuals (Interorganizational Committee, 1994). It is thus crucial to know what actors are involved and how each are affected for the assessment.

Identifying the Stakeholders

In order to assess development impacts, the stakeholders need to be identified. After identifying the relevant stakeholders, assessments can be made regarding how the benefits and limitations are distributed. For instance, who wins? Who loses? If there are both benefits and limitations for all stakeholders then the next question is, how much? The social distributions of costs and benefits can expose connections to broader social processes. The various stakeholders involved in this study include the private partners, both federal and state governments, educators, parents, students, and community.

Benefits and Limitations: Academic Performance and Social Impact

Academic Performance

As a result of the privatization efforts, educators are receiving tremendous pressure to prove the effectiveness of their teaching. A school’s success is being measured by student performance on standardized achievement tests. People assume that if a school’s test results are high this means their teaching methods are effective. Conversely, if a school’s test scores are low, they deem it failing and having low-quality teachers. Ironically, considering the significant push from private partners who are fundamentally opposed to the idea of accountability measurements on their own “social responsibility” efforts, to eliminate auditing requirements targeted towards them, educators and other public stakeholders can make the case for the FutureTech model that

the test scores reflect the effectiveness and quality of these initiatives. Unfortunately, as we have seen, it would not matter because the private sector has considerable political and economic clout based on their colossal financial resources that relieves pressure for government funding. However, for the sake of this study, it is argued that these results can also be used to signify the quality and effectiveness of this model. Test scores do not reflect either of these things but it is useful to examine the data based on the same methods used to assess the quality of teaching taking place to interrogate the underpinning logic that technology can be used to equalize and alleviate inequities, the same logic used by the private sector in order to gain access and control in education.

SAT Scores

The Standardized Assessment Test, commonly known as the SAT, is owned by a private nonprofit organization, College Board, and is intended to assess students' readiness for college. College Board asserts that the SAT is not meant to mirror high school curriculum but to test "developed reasoning" and overall critical thinking skills¹⁰. SAT performance reports for 2011, 2012, and 2013 were collected and compared with one another in order to see if there were any patterns, including: increases in scores, decreases in scores, or stability in scores across the years where the data was available.

While there was only a limited amount of available data collected on SAT performance, the three years that were analyzed showed a consistent but very small decrease in test scores across each subject. For example, in 2011, the data showed students average score on reading was 392 and then in 2012 this dropped to 383 and similar patterns were identified for writing and math scores where in 2011 writing and

¹⁰ <http://www.pbs.org/wgbh/pages/frontline/shows/sats/test/what.html>

math was 388 and 423, respectively and in 2012 they dropped to 381 and 397. When compared with the district and state averages for these years, the data indicated that FutureTech students were scoring lower than their peers. Another comparison was made with a school labeled by the DOE as a “comparable school” to FutureTech and this too showed that FutureTech has been scoring lower but this gap was much less significant. This could be attributed to many variables. It is not the aim of this chapter to come up with answers about what causes these patterns, however, in alignment with the overarching argument of this study that greater attention needs to be paid to the specific and unique cultural, political, social, and historical contexts of these schools, the following controversy over SAT content illuminates possible explanations.

Significant here and to this study’s overall focus on digital capitalism, is that there has been controversy growing over the question design and content of the exam with critics accusing College Board SAT designers of creating questions with a cultural bias toward the white and wealthy populations. This claim has since been supported by a nation-wide study conducted by the National Center for Education Statistics (NCES) that demonstrated only 9 percent of students with low socioeconomic statuses earned a score of 1100 where 32 percent of students with high socioeconomic statuses earned this score (Zwick, 2004, pp. 203-204).

Aside from the extremely lucrative SAT-prep market that these standardized tests open up for private companies, this cultural bias evidence can provide an explanation for the lower test scores achieved by FutureTech students. Additionally, when comparing the average number of students who took the test to the district and state average, it is important to recognize that the exam also costs fifty-one dollars to take and additional

money to send scores. While most of FutureTech's students are eligible for registration fee waivers, it requires a personal note from school guidance counselors providing another hurdle to overcome in order to just register for the test.

In terms of the FutureTech model, without evidence supporting some sort of correlation, there can be no indication claims made either way about the impact this model and overall initiative has on students' SAT performance. It does show that technology has not improved the performance in these areas but even this is a limited claim because the metrics and design of the test may very well be flawed. This data does further legitimize the questions targeted at these ICT-led education reform initiatives that ask why there continues to be so much investment and push for the expansion of these initiatives without evidence supporting their effectiveness.

Advanced Placement Scores

Advanced Placement exams, also created and delivered by College Board, take place once a year by students participating in the Advanced Placement program (AP). Advanced Placement is a program in the United States that offers college-level curriculum and exams. This information is significant because the AP program helps increase students' chances of gaining acceptance into college and it is suppose to reflect their college readiness on the specific subject-areas they participate in. As already discussed in Chapter Three, one of the main objectives of FutureTech's partners is to make sure that their students are prepared for college and the labor market. Additionally, the overall argument being espoused by these partners regarding technology and academic performance is that technology can be used to enhance academic performance

and close achievement gaps. The accuracy of this claim should be reflected in these Advanced Placement scores.

The AP scores collected from 2013 academic year showed that 13.9% of FutureTech students participating in the AP program scored a three or better (the exam is scored out of 5). When compared with the same “comparable school” scores it was shown that FutureTech’s average was nearly 40 percentiles lower. However, when FutureTech was compared to itself, over the past three years, the data showed a steady increase in score averages.

Table 3: 2012-2013 FutureTech advanced placement (AP) performance.

Subject	Tests Taken	% Score 1-2	% Score 3-5
All Subjects	72	86.1	13.9
English Language Arts	14	85.7	14.3
English Lit/Comp	14	85.7	14.3
History and Social Science	20	85	15
Govt & Pol: U.S.	20	85	15
Math and Computer Science	23	82.6	17.4
Calculus AB	11	63.6	36.4
Computer Sci A	12	100	0
Science and Technology	15	93.3	6.7
Biology	15	93.3	6.7

Overall Student Growth Measured by Annual Comparisons across State

Standardized Test Scores

Standardized tests are used extensively by private partners and the DOE to determine the overall quality and effectiveness of a school. It is interesting to assess the impact of the FutureTech model through these same metrics that the partners use for evaluating schools because they could potentially indicate that their intervention has been ineffective and of poor quality.

The standardized test scores from 2010-2013 for FutureTech were collected and cross-analyzed in order to determine the overall student growth according to these measurements. Using the DOE's metric for typical growth, above typical growth, and below typical growth, the data revealed that student achievement during this time frame that the students are typical in English and Language Arts but significantly lower than the district and state averages. For Math, FutureTech students came up borderline typical for grades 6-9, 11 and 12, and lower than typical for grade 10. Again, these came up lower than the state and district numbers. In terms of comparing this data to the district scores, it is important to recognize that these students at FutureTech came in already under performing at least by one grade level behind.

While expressing her immense frustration with standardized tests, one teacher remarked:

The classroom experience people have in an urban public school where you know this is a school where 99% or 100% of them get free lunch you know...it's a completely different world. So they're struggling just to switch modes all of the time. They come in and out of a very dangerous place into this zone and then adjust back to their survival modes. And you are talking about apples and oranges when you are talking about test-taking because how are you going to compare data on one test where these kids are walking in with trauma and it's hard to kids who have the world at their fingertips like mine. The inequity is horrendous. America needs to make education important. America needs to keep people out of poverty. They need to help this country be in a better place and that starts and ends with solving poverty issues and education.

This response shows this teacher recognizes the flaws with standardized testing and points to external social, cultural, political, and economic issues that could be responsible for differences in test scores. Therefore, the findings presented should be considered with the entire context of the school and community. For instance, in the following table, it is evident that FutureTech has unique needs compared to the state. This further illustrates

the importance of targeted policies and individualized learning. With the large English language learner population at FutureTech, perhaps it would be most beneficial to spend more time using the technology for phonics purposes.

Table 4: General indicators.

Title	% of School	% of District	% of State
First Language not English	46.5	46.3	17.8
English Language Learner	27.2	29.9	7.9
Low-income	89.6	77.7	38.3
Students with Disabilities	18.9	19.5	17
Free Lunch	86.1	74.6	33.6
Reduced Lunch	3.4	3.1	4.7
High Needs	94.5	85.2	48.8

According to the school’s website and related news articles, a place where FutureTech has seen substantial improvements is in the general indicators of attendance rates and graduation rates. This is one of the most prominently touted successes of FutureTech in related news articles with an example being:

It’s an urban school that has shown marked success, especially when compared with others in the district: 82 percent of its students graduate, 92 percent of its first graduating class in 2006 went to a college and today, 94 percent of [FutureTech] graduates are in college (Paulson, 2011).

The archival data gathered confirmed these statistics but contradicted claims made in other articles about improved attendance and graduation rates. However, what is significant to note here is that FutureTech’s graduation rates are considerably higher than the district averages.

Graduation Rates

The 2013 graduation rate was 80% but 12% of the remaining 20% were still in school and just taking longer than four years to finish as opposed to dropping out. This is

substantially higher number than the district average of 65.9% for the same year. In 2012, the graduation rate was 90% with 9.5% still in school. In 2011, the graduation rate was 94%. This data indicates that there has been a steady drop in graduation rates over the past three years. Interestingly enough, in 2010 the graduation rate was at 82%. The data shows that there was a substantial increase in graduation rates from 2010 to the 2011 data showing an increase from 82% to 94%. Then, from 2011 data to 2012, there was a 4% drop and then a significant 10% drop from 2012 to 2013. These numbers have been consistently higher than both the state and district averages, which is notable. This could be attributed to the structure of the school’s model that operates on an extended day and dedicates a substantial amount of attention to the general well being of its students. No claim can be made regarding the technology component of this model but the resources provided that enable this extended day and extra-curricular activities to keep the kids busy may contribute to these higher graduation rates.

Table 5: Graduation rates.

Graduation Rate	% FutureTech	% District	% State
2011	94	64.4	83.4
2012	90	65.9	84.7
2013	80	65.9	85

Attendance Rates

While the attendance rates are consistently a little lower than the district and state averages, there has been substantial improvement within the school when comparing across annual reports. For 2013, FutureTech had an attendance rate of 92.6% where the district average was just slightly higher with 93.5% and the state average was 95.4%. In

2012, these numbers were consistent with the 2013 numbers and overall, since 2010, which had a daily attendance rate of 94%, these numbers have stayed the same.

Table 6: Attendance rates.

Attendance Rate	% FutureTech	% District	% State
2010	94	92	94.7
2012	91.5	92.3	94.9
2013	92.6	92.2	94.8

Overall, the graduation and attendance rates data are not useful for highlighting or assessing the impacts of these partnerships since the patterns were inconsistent. What was interesting though was the contradiction between the data reported by the DOE and related news articles that touted FutureTech’s improvement in attendance and graduation rates. The theory is that, attendance rates and graduation rates reflect the overall health of a school so the rationale for gathering and presenting this data was to highlight the overall health patterns. If the model was working to improve schools then these two indicators would, in theory, steadily improve. Perhaps with more data, certain correlations could be illuminated.

Social Impact Categories

As previously discussed, social impact is an extremely broad concept and assessing it proves to be challenging. The social impact here is assessed based on improved life prospects as determined by increased educational attainment and opportunities for obtaining IT related jobs.

IT Related Job Opportunities

One of the main arguments made by FutureTech’s private partners is that by allowing IT companies to be involved from the ground-up, they will ensure that these

students are fully prepared and have a greater chance at securing an IT related job. The reasoning behind this is that no one knows what is needed for jobs with their companies better than the leaders of those companies. IBM even made the claim that students will acquire internships with the company in order to train them specifically for IBM jobs (Paulson, 2011). For a group of students who are normally disengaged from the IT sector, these opportunities would be invaluable and present an opportunity for social mobility.

Despite articles supporting claims that these students are afforded the opportunity to do internships with the private partners, the educators from the interviews said that this was not the case. When asked explicitly if the companies partnered with FutureTech have the students do internships with them, the overwhelming consensus among responses was that this did not happen. One response was:

And...you know, even with all of these support efforts, these kids, because of what they are up against, are really not benefitting from these resources. There is still not that path to a career for them. Not as much as they promised or as much as I would like to have seen. That is still in the plans for progress so that's where I think it is headed you know, with the model.

However, they did say that the teachers encourage students to seek out these internships not necessarily from these giant corporations but smaller businesses in the city the school is in.

In terms of social mobility, there is little evidence from the findings to suggest that FutureTech model is making much of a difference. However, perhaps with longitudinal data that tracks the school's alumni to see where they are and what they are doing now, there would be evidence to suggest that the exposure and emphasis being placed on technology at FutureTech is encouraging social mobility. If these companies followed through and did give these students internships this would give the students the

leg up they needed. Being able to put that on their resumes would open more opportunities for them in the IT sector and for college. These things together would be a huge benefit for students and could lead to social mobility opportunities. This is not an inherent flaw of the model but rather a lack of consideration and implementation issues on the private sector side of the partnership.

Increased Educational Attainment

It has long been argued with significant data to support it, that level of education correlates to income. Therefore, it would seem to be the case the greater opportunities for IT related jobs is directly related to increased educational attainment. In order to assess the social impact in terms of increased educational attainment this section presents the findings from the archival data collected on “after high school plans”. The only available data for after high school plans was for academic years, 2011-2012 and 2012-2013.

After High School Plans

Because there was only two years worth of publically available data on FutureTech’s graduating students plans, not much assessment can be made about the impact on educational attainment for this indicator. However, the number of students that FutureTech is sending to college has been admirable and has received a lot of attention in related news articles, making this data worth sharing.

For academic year 2011-2012: For FutureTech’s 2012 graduates, nearly thirty percent (27%) are attending a four year public university and 15% are attending four year private college or university. Additionally, 33% are attending community colleges. Only 5% of the graduating class indicated that they were going strait into the labor market but there is no data on what types of jobs were obtained. For the academic year 2012-2013:

For FutureTech's 2013 graduates, 25% went straight to a four year public university, 16% are attending a four year private university or college and 48% are attending community college. As mentioned above, FutureTech has received accolades in this area in the media. More than half of the articles analyzed in this study praised the college attendance rates of FutureTech's graduates.

General Benefits and Limitations

Each interview participant was asked how the private partners include the students in their companies to ensure that they are gaining the hands-on experience promised to them as part of this partnership. Through the responses, it was found that the private partners did not offer any internships to the students or privilege them for any other opportunities with the students. However, it was also found that at least in its early days, representatives would come in and talk to the students about possible job opportunities in the field of information technologies and this exposure was seen as a great benefit, especially for a population of students that would not normally have this exposure to inside knowledge. One teacher discussed this and said,

When I speak to the kids about it [technology sector jobs] that is so far removed from them and I think having more people from the corporate world coming into the school and talking to the kids is crucial. It use to happen but not anymore. They need it to happen though more than ever so that they understand and see that these people are invested in them. It is more than just the money. It is time, the mentoring and knowing that they matter to the corporate world is crucial because I don't think they think they do at all. That was the mission and we need to get back there for these kids.

Another crucial element of this model's mission, an acclaimed benefit and hallmark of FutureTech model is that it supports a "21st century curriculum". Indeed, one article

discussing the school as it related to the Obama Administration's education goals and future school models (FutureTech's model) outlined the 21st century curriculum:

TechBoston Academy supports a 21st century curriculum, with rigorous graduation requirements, including 4 years of science, 4 years of math (Pre-Calculus, Calculus, or AP Calculus) and 4 years of technology. Courses at TechBoston include Biotechnology, Forensic Science, Entrepreneurship, and Computer Science. The school also offers industry certifications in Microsoft Office, Adobe, and Cisco Networking (Barnett, 2011).

These are notable benefits of this model that privileges STEM courses because in theory, it would translate into acquiring exceptional technological skills that enable them to obtain rewarding higher income IT related jobs. There is simply not enough evidence to claim that these benefits are being realized. However, the potential should not be dismissed. It is just an indication of what is needed.

A definite benefit of FutureTech's model that was widely acknowledged in related news articles and press releases about the school and by the FutureTech educators that were interviewed is the technology related courses they are able to offer. One article outlines the school's technology requirements, "core technology requirements include classes in web development, digital art, media arts, and other similar areas" (Whitehouse.gov, 2011). In the interviews, one teacher discussed how the seniors are required to take on a technology related senior project and that most decide to build a website but they are also able to do graphic design projects, or documentaries for example. These project requirements provide the opportunity for students to get hands-on experience with technology related projects and to develop technological skills that are attractive to IT employers and useful for college.

One article praises the technological resources that the school has by saying, every student from grades 8-12 is provided a state-of-the-art laptop and technology is integrated into all academic courses, for example with

students designing technology-based presentations, developing websites, and creating videos (Whitehouse.gov, 2011).

As revealed through the findings discussed in Chapter Three, this is a little misleading because of the challenges faced with the unreliable Internet. The classrooms are all supplied with a cart containing 24 laptops, which is a definite benefit but the 1:1 (one computer per student) is no longer a unique trait of this model as every school in this district is a 1:1 school. This does not lessen the benefit of having that access though and it could be the case that FutureTech would not be able to afford these resources without help from the private partners.

All of the news articles used as data sources praise the technology-based curriculum and the fact that technology is integrated into all academic course but this too is not accurate. Aside from the apparent infrastructure barriers the school faces, when asked the question about the benefits of FutureTech's technology-driven curriculum all educators made it a point to clarify that this is the mission but it does not happen. One teacher said she had to be careful with what she said regarding this technology-driven curriculum because it is suppose to be a hallmark of the school. She stated:

Well...it's suppose to be. It's complicated. It is the mission and I think it was more that way in the beginning... how can I say this without saying too much because I have to tread carefully about what I say about this, umm...so I would say that in a perfect world, yes, that's the idea but broadband issues, laptop issues, maintenance issues, keeping up with new technology issues...yeah, like I was saying keeping up with the technology has frustrated that mission, greatly.

This response highlights the primary limitations of this model but perhaps the most pertinent is the issues of sustainability and resource maintenance. Technology is now seen as necessary in order to keep the achievement gap from expanding.

The achievement gap is going to keep getting wider because the problem that I see is that in order to keep up you know ...computers... they keep getting better. To keep up with technology and to keep up with the speed of the rate of companies ...um...their products that keep getting produced is making it impossible to try and slow down the growing achievement gap. Like, you have private school kids at the high end of the spectrum basically having the world at their fingertips and even kids at the good schools with a lot of money and then you have our kids who are already at such a disadvantage and then you keep adding this technology and that...I mean...poverty really is the dividing line.

Also demonstrated through this response, a central limitation expressed in the interviews was the cost of upkeep with the technology. Several informants discussed the limitation of not having the money to keep up with the rapid pace of technological innovation. There is a need for more sustained funding and resource management in order to overcome this limitation at FutureTech, which, as expressed above, can have the consequence of widening the achievement gap. Even here though, we see that economic inequality is the real limitation.

Ultimately supporting the argument of this thesis, that foundational issues such as poverty in this case need to be addressed before any of these opportunities can be fully appreciated and for the potential of technological resources to be able to make a difference. One of the teachers sums it up this way:

And...you know, even with all of these support efforts, these kids, because of what they are up against, are really not benefitting from these resources. There is still not that path to a career for them. Not as much as they promised or as much as I would like to have seen. That is still in the plans for progress so that's where I think it is headed you know, with the model but unless we invest in fixing what causes poverty then all of this is useless to me.

Also, when asked the question, “do you think that the students have an advantage over others because of their exposure to the technology?” The responses highlighted that the potential benefits from this techno-centric education model cannot begin to be assessed

until the root of social inequalities is targeted. One particularly telling response to the question above was from the 9th grade physics teacher who stated:

Umm...so that's a difficult question. I think that the challenges my students face are really significant and I think that they get to me in the 9th grade just so far behind that it would be difficult for me to say that they really have a whole lot of advantages. Considering where these students are coming from, it isn't even a fair question to ask if the technology is helping. Um...that being said, I think that our school is definitely provides so much support in that way, not so much from technology but from our student support teams.

Indeed, a benefit of this model is the flexibility it allows. FutureTech is particularly strong in addressing students' needs and providing these support systems which has been enabled by this flexibility them being a pilot school. One article quotes President Obama on this topic:

We're also trying to give school districts more flexibility to open charter schools and pilot schools like [FutureTech], so that they have the flexibility to do what's best for students (Tsang, 2011).

This flexibility has resulted in further dedication to professional development where as discussed earlier the focus has shifted to addressing the social needs of their students.

Even aside from these major structural issues that present themselves as the biggest limitation, because of the significant barriers to integration the school faces with its infrastructure, it is especially difficult to assess how this model can contribute to acquiring of these necessary 21st century skills being purported by the private sector and Obama administration. However, the focus clearly needs to be on ameliorating poverty issues before we can think about the benefits and other potentials of technology. These are significant policy oversights that are working to perpetuate existing inequalities.

In sum, when President Obama addressed the public, praising the FutureTech model, he made the following assertion:

What's happening here [at FutureTech] is working. We know what works. What's required, the, to get results from any school is no longer a mystery. And that means there can't be any more excuses—from anybody. As a nation, we have a moral and economic imperative to give every child the chance to succeed.

The findings presented in this chapter indicate that this is not exactly accurate and the perpetuation of this message throughout the media is one of the reasons these initiatives are continuing to be heavily invested into and expand even without evidence to support that they are working. Indeed, in his state of the union address, President Obama touted FutureTech as an example of the “shared responsibility” his administration is calling for in education. Specifically, he said that the administration is seeking to expand this model that uses technology in every classroom and is partnered with philanthropic business leaders that help design education programs that best prepare students for the global economy.

Chapter Four Limitations

There are numerous limitations when it comes to assessing social impact in any realm. It is especially problematic to make assertions based on social impact evaluations conducted using quantitative measurements. As previously discussed, these measurements are rigid and reductionist, which is at odds with a socially centered approach to understanding these social processes and relations. It does not allow for the incredibly multi-faceted cultural, social, political, and economic contexts in which these interventions, initiatives, and policy actions are taking place.

In an attempt to combat these significant limitations, qualitative data findings were presented and interwoven throughout the presentation of archival data findings. To reiterate, the reason the archival data was significant for this study was because these

same measurements are used by the DOE and private investors when determining necessary policy interventions and funding.

Overall, the complexities involved are much too great to cover or be accounted for but significant attempts were made to address these layers and what it means for the findings presented in this chapter. This was the rationale for outlining demographic data of FutureTech and how it compares to the district and state profiles. In order to move forward with these evaluations, certain questions must be answered first.

Further Questions

Standardized achievement-test scores are used to evaluate a school's effectiveness. The amount of skills and knowledge that students acquire is much too vast to all be included in standardized testing. So this begs the questions—"who decides what is included (who designs the exams)?", "why are these areas being privileged (why is what is included deemed most important)?" and "how does this connect to larger ideological underpinnings of this western society?" There is an overwhelming amount of scholarship that discusses both the issues and promises of standardized testing. The purpose of its discussion in the context of this study is to illuminate the private sector's role in these tests from their development, to implementation, to managing the data and the claims made as a result of the findings confirmed what we already knew about flawed metrics for measuring student achievement.

The assessment metrics used to evaluate student performance are inherently flawed because they do not take specific social, political, and economic contexts into account, which could be used to understand lower test scores. Additionally, standardized tests do not account for progress or growth. It is argued that progress is captured when

you compare a single student's test scores against their previous test scores. This is extremely limited and does not actually say anything about a student's progress. If anything, standardized test results should be regarded as very rough approximations of a student's status only with respect to the content that is being represented on the test.

Along with the need to develop accountability measurements targeted towards these companies' social responsibility efforts, is the need to develop assessment tools for the impact of these partnerships and other FutureTech type schools have on students. Overall, a more targeted and aggressive approach to evaluation is necessary. There is also a need to identify valid means for measuring the impact and attainment of 21st century skills on students. Again, this can also act as a form of accountability measures for the private investors at least in terms of raising public awareness and this would be powerful because of the companies' concerns regarding public image.

CHAPTER 5

CONCLUSION: IMPLICATIONS FOR POLICY, PRACTICE, AND FUTURE RESEARCH

This study cuts through several burgeoning research topics including technology driven public private partnerships, digital inequalities, and ICTs for development. As made evident throughout this thesis, there has been extensive research completed on private sector interventions in public education. However, aside from Dan Schiller, who has primarily looked at higher education, there has been virtually no research completed on this topic from a political economy of communication perspective. This focus on higher education is not surprising for a variety of reasons but concerning this study, the particular innovative model of school being examined here, where IT companies are involved throughout every stage of development with the primary goal being to prepare students for STEM related jobs, has only taken hold in the past couple of years as a result of various political and economic forces.

The central argument of this study is based on the premise that technology is not a neutral artifact, something separate from the cultural, economic, and political systems in which it is developed, distributed and used. Consequently, this study aligns with scholars from the critical schools of thought who believe that existing social inequalities are neither alleviated nor deepened by technology but argues instead that this is a function of the social systems that they operate in. The two main research questions driving this research include: 1) How are forces of digital capitalism evident in the FutureTech model? and 2) What are the benefits and limitations of the FutureTech model in terms of academic achievement and improved life prospects? This thesis has a dual objective of extending scholarship in the areas of technology and inequality and education reform and

informing policy makers by providing suggestions for alternative approaches to crafting sustainable and effective policies in the realm of education.

Education is a site where all of the overarching issues serving as the motivation and focus of this research (technology, power, and inequality) intersect and can be examined. The broader system in which the relationships among these exist and continually evolve must be understood in order to identify their implications. Similarly, the proliferation of IT industry involvement in education did not evolve spuriously; they are the result of historical processes and ideological shifts within the political economy.

Summary of Findings

This thesis set out to examine how digital capitalism is evident throughout the FutureTech model through a qualitative single-case study approach. The findings suggest that digital capitalism is apparent through the increased emphasis being placed on market-driven curricula that were referenced as vocationalism in Chapter Two. This was supported by the courses offered at FutureTech where students are required to take technical skills courses that are suppose to prepare them for IT related jobs. It was discovered that the private partners have had direct influence over the instructional and learning processes by pushing for a 21st century curriculum design and setting the mission statement for this model that continues to guide the structure of the school. This push for 21st century curriculum that enables the development of 21st century skills has and continues to be encouraged under a global competitiveness guise.

Digital capitalism was also made apparent in the FutureTech model through the privatization agenda. This was demonstrated by the hyper-accountability measures such as high-stakes testing and increased professional development meetings. As previously

mentioned, FutureTech served as a pilot school for new standardized tests and courses that are to be implemented throughout the country in the coming years. Additionally, FutureTech spends a significant amount of time on professional development for the teaching staff. This is part of the initial mission set by the Bill and Melinda Gates Foundation and although the focus of these meetings has shifted from technology-focused skill development to a more social focus for their students, it is still influenced by that initial mission and there continues to be a substantial amount of time devoted to the incorporation of technology in those meetings.

Finally, the most problematic finding in regards to digital capitalism in the FutureTech model stemmed from the techno-venture philanthropy aspect. It was made clear that many private companies make their way into public education through philanthropy under pretenses of CSR. This is indeed how the Bill and Melinda Gates Foundation and others such as IBM became involved in this new model but unfortunately we have seen little evidence that its goals are being met. As one FutureTech teacher stated, “the magic of the Gates Foundation is gone” because they are no longer active at FutureTech. This has left the school with the same limited budget as its counterpart public schools but with a mission that exceeds its financial reality. What we have seen, however, is increased participation from these private companies and more intimate relations between the private sector and public education like Schiller (1999) predicted in *Digital Capitalism*.

The value of this project being a case study is that it provides empirical evidence to help guide policy makers and relevant public education stakeholders in creating more effective ICT related education reform initiatives that maximize benefits for the groups

they seek to serve. What became evident throughout this research is that it is crucial for policy makers to take a more targeted approach to creating these initiatives. A more targeted approach would take into account and reflect the unique history, context, and needs of the communities these initiatives are created for. This is why a political economy of communication framework is necessary. While this thesis tended to emphasize issues of class, efforts were made to acknowledge the different socio-cultural complexities involved. Political economy has been criticized for being essentialist and privileging class power in its analyses (Chakravartty and Paredes Castañeda, 2002, p. 68). The focus on class throughout this study came from its prominence in the data collected in conjunction with this model's mission to target low-income populations.

The emphasis that the PEC places on historical processes in order to understand a particular phenomenon's contemporary context was incredibly instrumental for guiding this research. By presenting the historical trajectory of the relationship between technology, education, and economic inequalities, this thesis argues that the proliferation of these ICT related education initiatives are part of the larger neoliberal agenda. Considering the global economic crisis underway which has resulted in extreme budget cuts for public education, it is critical that these partnership models are closely examined in order to avoid disempowering public actors by shrinking the public voice and undermining democratic ideals by transferring the public decision making power to the private investors.

While ubiquitous access to ICTs is becoming increasingly important in order to excel in both the academic and labor market realms, it is important to recognize that the technology itself is not some neutral artifact determining how society operates. It is the

political, economic, cultural, and social contexts in which they were developed and currently operate in that shapes the role technology plays. This is in direct alignment with the political economy of communication perspective.

The works of Dan Schiller, Robert McChesney, Vincent Mosco, and Manuel Castells have extensively influenced the theoretical and instrumental framework of this thesis. The development and construction of this study's primary research question was inspired by Dan Schiller's (1999), *Digital Capitalism: Networking the Global Market System*. The predetermined categories and initial codes for this study's data analysis were derived from the characteristics and processes resulting from digital capitalism outlined in his book. Robert McChesney's (2013) *Digital Disconnect* was used to inform the objectives of this study. The motivation behind this study was a direct response to McChesney's call for more scholars to undertake research about technology, inequality, and society by employing a political economy of communication approach. Mosco's work on the PEC was used to construct the theoretical and instrumental framework. Manuel Castells was the primary theoretical influence for this study. His work on network theory of power and his work on the network society provided the theoretical underpinnings of this entire thesis.

Limitations of this Study

While this study does provide indispensable empirical evidence of how digital capitalism is at play in this innovative model of a technology-driven public school that is being used as a model to be replicated throughout the country, the findings are not generalizable. In line with one of the main arguments of this study, that each district is made up of a unique group of students with needs that reflect the specific community and

culture from which they are situated in, the findings from this study do not claim that the benefits and limitations found at FutureTech can be attributed to all similar models found elsewhere.

One of the advantages to doing qualitative research is that it affords the opportunity to gather a vast amount of detailed data from various sources in order to gain a holistic understanding of the particular phenomenon from different perspectives. While this study utilized various forms of data, interviews, archival, and documents, what is missing is the student voice. The student voice would have been particularly helpful for Chapter Four when analyzing the impacts on future plans of FutureTech students. Unfortunately, time constraints prohibited this from happening. It would have taken too long to receive approval on the Institutional Review Board application to include minors in the study since there is a heightened ethical risk involved. Time constraints also contributed the other limitation of this study.

Finally, this research would benefit greatly from being redesigned as a longitudinal study. It would have been ideal to carry out this study over three or more years in order to track the progress of the students. It would have also been helpful to be able to incorporate participant-observation methods to see first hand how technology is being integrated in the class and how the infrastructure issues were navigated.

Suggestions for Future Directions

The limitations outlined above can be used for future research. As discussed in the methods section in chapter two, aggregating case study results can be used for theory building and to inform policy-making. Additionally, it is essential to include the student's voice in this research. There has been resistance to privatization practices across the

country by students. Interestingly enough, we are beginning to see students making their voices heard and one of the demands is that they be included in reform strategies and the policy decision-making processes. This will add an additional component to this research that will need to be investigated as these models evolve and the IT companies become more entrenched in the public education sector.

Dana Mitra, an associate professor at Penn State University does extensive research on student voice and education reform and noted, “students want autonomy, relevant pedagogy, respect, and collaboration, and greater responsibility in school decisions (Savrock, 2008). The students can also serve as a critical resource in identifying the underlying structural and cultural issues within schools that can be used to inform reform policies. In the context of ICTs and development, the unique student perspective can be useful in figuring out the specific needs of the students in order to tailor the use of ICTs in the classroom. Perhaps the student voice needs to be taken more seriously and incorporated as partners in these developing models like the IT companies are.

In addition to research on the student voice initiatives, an important suggestion for future research is to incorporate both longitudinal studies and participant observation methods. Participant observation would enable researchers to observe first hand how technology is being used in specific contexts, gain access to observe the internal structure and organization in these settings and the possible barriers to successful integration. Additionally, participant observation is always useful in terms of collecting observational data that can then be cross-analyzed with what was said in the interviews or documents being analyzed.

A majority of the available literature regarding these topics has approached them through a narrow or binary lens resulting in arguably shallow analysis. A prominent example of this can be seen in digital divide research that up until fairly recently has defined the issue in terms of those with access and those without. This limited binary definition has helped to foster the widely held belief that simply providing the hardware will solve the inequities rather than addressing the larger social, political, and economic formations that fuel and perpetuate them. Also relevant is the redundant argument between technology celebrants versus skeptics (Morozov, 2011; Hindman, 2008; Benkler, 2006). Unlike these camps that tend to ignore the political economic context, this thesis attempted to fulfill the call from McChesney's (2013) *Digital Disconnect* for scholars to focus on the way capitalism has set the terms for the role of technology in society, particularly in education, through the public private partnerships.

While there is a plethora of research completed regarding public private partnerships in education and education and technology separately, this thesis brought these together. Ultimately, the findings suggest that there is a need for more vigilance on behalf of policy makers in exposing the political and economic contexts of IT involvement in the reshaping of public education in the U.S. Again, most of the literature, according to McChesney, has ignored crucial aspects of how capitalism works and does not work which determines the role of ICTs in society. To this end, this thesis has closely examined the role and relationship of the private sector, government, and public stakeholders in the context of ICT driven education initiatives in order to draw connections between the micro and macro political and economic processes to better

understand how forces of digital capitalism are preventing ICTs from being a source of empowerment for these underserved groups.

It is my hope that this study can contribute to policy-making in a way that encourages policy makers to engage with issues of ICT and social inequalities from a more pointed, grounded, social, and targeted approach. By this I mean greater attention paid to the unique needs of the specific groups and communities these initiatives seek to serve. A more targeted approach based on individualized objectives, rather than assessing needs and crafting policies that stem from the homogenization of groups based on certain demographics. Understanding that market perspectives drive most policies, and only in a utopian world would policies be de-politicized and driven purely by social, rights-based approaches, I do hope that studies like this can influence policy makers to de-center the market focus and tackle these issues from a rights-based perspective. I believe that this study contributes to scholarship by extending discussions in the several burgeoning research areas that it intersects, which include technology and social inclusion/exclusion, technology driven public private partnerships, and technology and education.

U.S. Congressperson Michael Honda argued that the only way to achieve a solution to the inequities we are seeing in the context of technological integration in the U.S. education system is “by addressing the individual needs of each child, regardless the cost per pupil...” (American Educator, 2011). This study makes the same argument by promoting the need for more individualized, targeted, and grounded policy. One-size fits all policies will not account for the unique needs of schools. It is problematic to homogenize needs based on social demographic indicators. For example, a low-income student in Los Angeles is going to face unique challenges distinct from those of a low-

income student in rural Nebraska. This is in direct alignment with an argument made by Chakravartty and Paredes Castañeda (2002) regarding critiques of essentialist analyses from political economists. They state, “an analysis based largely on class, both in the US and transnational context, fails to account for globalisation as ‘a complex, multilayered process that does not take place in the same way in all countries, not even in the various regions of a given country” (Garcia Cancilini 1997, p. 3 cited in Chakravartty and Paredes Castañeda 2002, p. 68). As stated above, it is critical to assess not just the economic aspects but also the unique cultural and social contexts of the targeted groups. The importance of individualized policies cannot be overstated.

By looking at the relationship between the private sector, state, and civil society, it became evident that the government and private sector work closely together to achieve profits for the private sector and ultimately the economic supremacy of the nation. This was connected to the discourses surrounding 21st century skills and global competitiveness. While existing inequalities are being exacerbated by unequal access to adequate technological resources, it is important to understand that the technology itself is not responsible for the exacerbation of existing inequities. Instead, it is the various economic and political processes from which these technologies are being developed, disseminated, and applied that is responsible. Ultimately, these initiatives ignore underlying structural issues such as economic inequality and social structures that need to be ameliorated in order for technology’s promises to be realized. In the case of FutureTech, economic inequality really is the dividing line.

Suggestions for Policy Makers

Policy makers are not addressing the root causes of educational failure. One of these root causes pertains to issues of poverty. Overall, policy makers would benefit from decentering their economic focus in crafting policies and adopting a more social and cultural-based approach in order to enhance social cohesion and account for broader social goals related to increased equity. Limiting ICT applications for garnering appropriate 21st century skills to compete in the labor market prevents the other democratizing potentials of these ICTs from being realized. Ultimately, the reason it is important to move away from an economics based approach is because values aside from efficiency and profit are more important whenever it comes to a public good like education. In this context, equity is the primordial objective since technology is seen as an equalizer and these models are being pushed under this logic. Aligning with the suggestion for decentering of the economic focus approach to ICT related education reform initiative, is the suggestion to re-conceptualize and broaden the purpose of ICTs in education. This suggestion encourages policy makers to consider promoting and developing a greater understanding the conceptual application of technology. A shift in focus and alternative applications could entail considering the ways in which technology can be used for empowerment.

Another suggestion is that these initiatives would benefit most from a bottom-up rather than a top-down approach. By involving public stakeholders including students, teachers, and parents, would help provide insight on the unique needs based on the specific culture and barriers that this particular group faces. This way, initiatives could account for these challenges faced by the target group and include solutions and more

appropriate implementation strategies. Overall, homogenized “one-size-fits-all” policies work to mask underlying issues resulting in the use of resources (technology in this case) acting as mere bandages rather than ameliorating the issues responsible for the inequities in the first place.

Further Questions that need to be answered

In her 1973 book, *Policy-Making in Secondary Education*, Rene Saran opens up with the claim, “In the field of educational policy and administration, it is also true that few authors have placed the decision-making process at the centre of their work” (p.1). This is still true (at least regarding PPPs) as made evident through a review of the available literature. There seems to be a severe lack of research available on the internal structures and organization of these education related public private partnership models. Made evident already throughout this study, there is a plethora of literature available that discusses the ways in which governments promote and pressure schools to adopt these innovative funding strategies through partnering with the private sector.

However, there is still little known about the role that these private actors play in the development and organization of these partnerships. This study gathered some information on the role of the Bill and Melinda Gates Foundation in the development stages of FutureTech and how they influenced the learning and instructional processes. It also presented data on the responsibilities of these other private partners but even after interviewing the new principal of FutureTech and someone from the planning board for these partnerships, the opaque nature of governance structure of this model is apparent. Therefore, questions pertaining to the organization and governance of the FutureTech model still need to be answered. It is critical to understand these aspects because it is a

public institution, it should be open to the scrutiny of the public to uphold its democratic obligations.

In terms of impact, there is still little evidence to suggest that this model is effective based on academic achievement and social development indicators. It is still a wonder as to why so much money is being fueled into these initiatives with such little evidence supporting their purported success. If we were to adopt the economic centric approach to policy making, we could say that the return on investment has not been proven. So pertaining to impact, questions need to be investigated further to understand the underlying logic that explains why such substantial investments are still being made.

More research is needed in the area of standardized assessments. Who is behind the designing of these assessments? Additionally, who are the decision-makers for deciding what gets privileged and what does not in terms of content areas and skills? What is the logic behind the designing of these tests? How accurately do these tests measure students' knowledge base? And perhaps most importantly, the question that needs addressing is, what would be the alternative?

As discussed earlier, corporate social responsibility (CSR), as another trend related to digital capitalism, is seen as a prominent way for the private sector to enter into the education market. From a Gramscian perspective, some would argue that educational philanthropy is a ploy by private companies to gain control over the education sector not just for expanding their markets and maximizing profits but also in reinforcing hegemonic ideologies that are in line with private interest by gaining control over the curriculum design process (Robertson, 2010; Mosco, 2004; Schiller, 1999). This aligns with the idea of structuration. Structuration is the constitution of social structures through

agency (Mosco 2009, p.190). This entry point from the political economy of communication emphasizes that structures place constraints on individuals through economic, political, and cultural power. It is through structuration, Mosco argues, that hegemonic control is sustained. If private interests are being used to guide the organization and governance of education, then public private partnerships are working as vehicles for the extension of hegemonic ideologies that align with private sector values. We can now see how this is also influencing the overall restructuring of the education system.

While the challenges facing education reformers may seem insurmountable, this study has offered some suggestions on what steps need to be taken to ensure that the goal of public education aligns with the public interest. First, it is essential that underlying issues responsible for social inequities such as poverty are confronted because, as the findings presented here suggest, technology will act as a mere bandage and these policy oversights will result in the perpetuation of existing inequalities and solidification of asymmetric power relations. By advocating technology as a magic bullet of sorts, structural problems are oversimplified. In order to alleviate these inequities and provide the proper foundation upon which to implement more successful and sustainable initiatives, all political, economic and social problems must be addressed. Technological solutions cannot be privileged over addressing larger social, political, and economic contexts. Special attention needs to be paid to identifying the specific and unique needs of the targeted communities. This is imperative in order to see substantive and sustainable change happen.

Also discussed in this study was the need to establish impact assessment measurements for these interventions. For example, there has been a substantial amount of emphasis placed on the importance of 21st century skills. FutureTech is praised for its “21st century curriculum” which is intended to prepare students for jobs in STEM related fields. However, as we saw, there are no assessment rubrics in place to measure this. Furthermore, these impact assessments, especially for evaluating the FutureTech model can serve as a form of accountability measurement for the private partners.

While it became clear that these partners have too much political clout due to their enormous financial resources, these companies still need to be concerned with their public image. These assessments could be a way of incentivizing these private actors in following through and being dedicated to the success of their social responsibility initiatives. Finally, in order to bring about sustainable and impactful ICT related education initiatives for underserved communities, policy makers are urged to decenter their economic focus to policy making and adopt a more social-rights based approach. This would increase the probability of crafting more sustainable policies that maximize benefits for the populations they intend to serve.

Overall, threats to democracy in education need to be taken seriously. Education is a basic right and public education represents the democratic ideals of the United States. Public education must serve the interests of the public. As Diane Ravitch has proclaimed, “an attack on public education is an attack on democracy”¹¹. This study demonstrated how threats to democracy in education are presenting themselves through increased privatization efforts and the expansion and opening up of education markets. The way we

¹¹ Ravitch, D. (2014, March 28). *Public Schools for Sale? (Bill Moyers, Interviewer) [Audio file]*. Retrieved from <http://billmoyers.com/episode/public-schools-for-sale/>

are seeing democracy be undermined here is through the marginalization of public participation and public voice in education. With the U.S. economic downturns over the past six years and the global economic crises, there have been substantial budget constraints causing a dependency on private investors. We do not need to look any further than development initiatives in the global south to see what this means: unfettered power in the hands of private companies resulting in, as Dan Schiller warned us in his 1999 book, *Digital Capitalism*, a complete corporate take-over of public education.

APPENDIX
INTERVIEW GUIDE: FUTURETECH TEACHERS, TECHNOLOGY
COORDINATOR AND PRINCIPAL

1. How long have you been teaching at FutureTech?
2. Have you taught at any other schools in the area?
3. Have you taught anywhere else?
4. What drew you to teach here?
5. What does FutureTech offer over other public schools?
6. What do you see as a benefit of technology-driven curriculum?
7. Why do you think it is important that students be technologically literate?
8. What do you think the privileges are to having IT industry partners?
9. What is the role of the corporate partners in terms of services, hardware, instruction etc.?
10. Who do the corporate partners interact with? What is their presence in the school?
11. How do you think the school's partnerships with leading IT companies are influencing the structure of the school?
12. How do these partnerships influence the learning environment at TechBoston?
13. Do you believe that these students have an advantage over others because of the exposure to technology they are getting?
14. Are there any technology-centered events within the school?
15. Does the school try to reach out to a particular "target audience" in terms of its students? If so, why?
16. Why do you think these companies are interested in these partnerships?
17. Do you think the partnership is mutually beneficial? How so or why not?

18. What do you think the companies have to gain from these types of partnerships?
19. Do you think there are any downsides to these partnerships?
20. Do you feel that you benefit in any way?
21. Do you think that these students will be better prepared for college and or labor market because of the technology focus? Why or why not?
22. Are there any guidelines given to you for how to incorporate the technology in the classroom?
23. Does the school require its teachers to go through any kind of training for how to use and incorporate the technology?
24. Do you know where the school gets its technological hardware?
25. Have you seen an improvement in the students' academic performance since you began working here?
26. If you have taught somewhere else, do you see a difference in the students' academic performance (development of critical thinking skills, writing abilities, comprehension, etc.) here at FutureTech to those of the other schools you have taught at?

BIBLIOGRAPHY

- Apple Incorporated. (2014). Apple and education: iPad in education. Retrieved November 28, 2013. Retrieved from <http://www.apple.com/education/>
- Ball, S. J., & Youdell, D. (2009). Hidden privatisation in public education. *Education Review*, 21(2)
- Benkler, Y. (2006) *The Wealth of Networks: How social production transforms markets and freedom*. New Haven: Yale University Press.
- Bhanji, Z. (2012) Microsoft Corporation: A case study of corporate-led PPPs in education. *Public Private Partnerships in Education* (182-198). Northampton: Edward Elgar Publishing Limited.
- Bill and Melinda Gates Foundation. (2014). College ready education strategy overview. Retrieved July 20, 2013, Retrieved from <http://www.gatesfoundation.org/What-We-Do/US-Program/College-Ready-Education>
- Bill and Melinda Gates Foundation. (2014). Washington state strategy overview. Retrieved July 20, 2013, Retrieved from <http://www.gatesfoundation.org/What-We-Do/US-Program/Washington-State>
- Bill and Melinda Gates Foundation. (2014). Foundation fact sheet. Retrieved July 20, 2013, Retrieved from <http://www.gatesfoundation.org/Who-We-Are/General-Information/Foundation-Factsheet>
- (2013) Boston Public Schools and Chicago Public Schools Adopt BoomWriter Digital Education Platform and Technology Heroes Program. Retrieved on July 18, 2013. <http://eon.businesswire.com/news/eon/20130507006091/en/digital-learning/ed-tech/edtech>
- Boss, S. (2011). Technology Integration: A Short History. Retrieved on July 18, 2013 from <http://www.edutopia.org/technology-integration-history>
- Brady, D. and Sager, I. (2013) Why Obama Praised IBM's Brooklyn Education Model. Retrieved on June 27, 2013 from, <http://www.businessweek.com/articles/2013-02-13/why-obama-praised-ibms-brooklyn-education-model>
- Bush, G. W. (2001). *No Child Left Behind*, <http://education.ucf.edu/mirc/Research/NCLB%20-%20Bush.pdf>
- Castells, M. (2011) A Network Theory of Power. *International Journal of Communication*, Vol. 5, 773-787.
- Castells, M. (2010) *The Rise of the Network Society*. Malden: Wiley-Blackwell.

- Catalano, F. (2012). Here comes another tech bubble-in education. Retrieved on July 18, 2013, from <http://www.geekwire.com/2012/coming-tech-bubble-education/>.
- Cavanagh, S. (2013). P-Tech academic model taken statewide in New York. *Education Week*.
- Chakravartty, P., & Paredes Castañeda, M. (2002). Globalisation and critical media studies. *Southern Review: Communication, Politics & Culture*, 35(3), 63.
- Chakravartty, P. & Sarikakis, K. (2006). *Globalization and media policy: History, culture and politics*. Edinburgh: Edinburgh University Press.
- Chapman, B. (2013). Schools modeled after P-TECH--mentioned by Obama in state of the union--are in such demand city will open 3 locations in 2014. *New York Daily Times*
- Cisco networking academy. (2014). Retrieved July 20, 2013, Retrieved from <http://www.cisco.com/web/learning/netacad/index.html>
- Cisco Systems, I. (2008). *Equipping every learner for the 21st century: A white paper*. San Jose: DOI:C11-454-120-01
- College board. (2014). Retrieved March 23, 2014, Retrieved from <https://www.collegeboard.org/>
- Contini, F., & Lanzara, G. F. (2009). *ICT and innovation in the public sector [electronic book]: European studies in the making of e-government* Palgrave Macmillan.
- Dell K-12 Featured Solutions. (2014). Retrieved February 16, 2014, Retrieved from <http://www.dell.com/learn/us/en/26/k-12-solutions>
- Dell connected classroom. (2014). Retrieved February 16, 2014, from <http://marketing.dell.com/connectedclassroom>
- Davies, B., & Bansel, P. (2007). Neoliberalism and education. *International Journal of Qualitative Studies in Education*, 20(3), 247-259.
- DiMaggio, P., Hargittai, E., Celeste, C., & Shafer, S. (2004). Digital inequality: From unequal access to differentiated use. *Social Inequality*, 355-400.
- Draxler, A. (2012). International PPPs in education: New potential or privatizing public goods? *Public Private Partnerships in Education* (pp.43-62). Northampton: Edward Elgar Publishing Limited.

- Dreyfus, H. L. (1992). *What computers still can't do: A critique of artificial reason* MIT press.
- Dunleavy, P., Margetts, H., Bastow, S., Tinkler, J., & Yared, H. (2001). Policy learning and public sector information technology. *American Political Science Association's Annual Conference*, 28.
- Edwards, M. (2008). *Just Another Emperor? The Myths and Realities of Philanthrocapitalism*, New York: The Young Foundation & Demos.
- E-Rate Program (2004), Federal Communications Commission. Retrieved on June 23, 2013 from <http://transition.fcc.gov/learnnet/>
- Farrell, M. (2013). Tech firms call for mandatory computer classes. *Boston Globe*.
- Falch, M., & Henten, A. (2010). Public private partnerships as a tool for stimulating investments in broadband. *Telecommunications Policy*, 34(9), 496-504.
- Ferdinand, P. (2000) *The Internet, Democracy and Democratization*, London: Frank Cass.
- Fried, B. (2013). Young scientists and innovators amaze president obama at the white house science fair. Retrieved January 22, 2013, Retrieved from <http://www.whitehouse.gov/blog/2013/04/22/young-scientists-and-innovators-amaze-president-obama-white-house-science-fair>
- Giroux, H. A. (2008). Education and the crisis of youth: Schooling and the promise of democracy. *The Educational Forum*. 73(1) 8-18.
- Giroux, H. A. (2002). Reclaiming Antonio Gramsci in the age of neoliberalism. *Radical Philosophy Review*, 5(1/2), 114-125.
- Glaser, B., & Strauss, A. (1967). *The Discovery of Grounded Theory*. 1967. Aldin, New York,
- Hatcher, R. (2006) *Privatization and sponsorship: the re-agenting of the school system in England*, in *Journal of Education Policy*, 21 (5), pp. 599-619.
- Hargittai, E., & Hinnant, A. (2008). Digital inequality differences in young adults' use of the internet. *Communication Research*, 35(5), 602-621.
- Heussner, K. (2013). More fodder for bubble debate: Ed tech startups get \$1.1 billion in 2012. Retrieved from <https://gigaom.com/2013/01/21/more-fodder-for-bubble-debate-ed-tech-startups-get-1-1b-in-2012/>
- Holstein, J. A., & Gubrium, J. F. (1995). *The active interview*. Sage Publications, Inc.

- Honda, M. (2011). Preserving the american dream: A teacher-turned-congressman starts a national dialogue on equity. *American Educator*, 35(1), 2-4.
- Herman, E. & McChesney, R. (1997) *The Global Media: the new missionaries of corporate capitalism*. London: Cassell.
- Hindman, M. (2009) *The Myth of Digital Democracy*. Princeton: Princeton University Press.
- Hursh, D. (2007). Assessing no child left behind and the rise of neoliberal education policies. *American Educational Research Journal*, 44(3), 493-518.
- Hursh, D. (2011). Explaining Obama: The continuation of free market politics in education and the economy. *Journal of Inquiry and Action in Education*, 4(1), 2.
- International Business Machines Corporation. (2011). *IBM corporate responsibility report*. (Corporate Responsibility). Armonk, NY.
- International Business Machines Corporation. (2014). IBM cloud academy. Retrieved November 28, 2013, Retrieved from <http://www.ibm.com/solutions/education/cloudacademy/us/en/>
- International Business Machines Corporation. (2014). IBM academic initiative. Retrieved November 28, 2013, Retrieved from http://www-304.ibm.com/ibm/university/academic/pub/page/academic_initiative
- Janesick, V. J. (1998). *"Stretching" exercises for qualitative researchers* Sage Publications Thousand Oaks, CA.
- Jenkins, H. (2006). *Convergence culture: Where old and new media collide* NYU press.
- King, E. (2009) Foreword, in H. Patrinos, F. Barrera-Osorio and J. Guaqueta (eds.) *The Role and Impact of Public Private Partnerships in Education*, Washington: World Bank Group.
- Kishan, N. R. (2008). *Privatization of education* APH Publishing.
- Klonsky, M. (2011). Power philanthropy: Taking the public out of public education. In P. E. Kovacs (Ed.), *The gates foundation and the future of U.S. "public" schools* (pp. 21-38). New York: Routeledge.
- Knowles, T., Kober, N., Ludwig J., Petrilli, M., Slavin, R., Tseng, V. (2013). *Leveraging learning: The evolving role of federal policy in education research*. Washington DC: Aspen Institute Education and Society Program.

- Kovacs, P. (Eds.), K. Saltman, M. Klonsky, J. Shiller, J. Horn, C. Howley, A. Howley, L. Grey, H. Christie, K. Libby, P. Lather, D. Gabbard, M. Brady (2010). *The gates foundation and the future of US "public" schools* Taylor & Francis.
- Kovacs, P. E., & Christie, H. (2008). The gates' foundation and the future of US public education: A call for scholars to counter misinformation campaigns. *Journal for Critical Education Policy Studies*, 6(2), 1-20.
- Lawless, E. J. (1993). *Holy women, wholly women: Sharing ministries of wholeness through life stories and reciprocal ethnography* University of Pennsylvania Press.
- Malterud, K. (2001). "Qualitative research: Standards, challenges and guidelines." *The Lancet*. 358: pp. 483-488.
- McChesney, R. W. (2013) *Digital Disconnect*. New York: The New Press.
- Microsoft in Education Partners in Learning. (2014). Retrieved July 20, 2013, Retrieved from <http://www.microsoft.com/education/en-au/partners-in-learning/Pages/index.aspx>
- Microsoft Corporation. (2014). Microsoft DreamSpark for students and academic institutions. Retrieved November 28, 2013, Retrieved from <https://www.dreamspark.com/>
- Microsoft Corporation. (2014). Microsoft educator network. Retrieved November 28, 2013, Retrieved from <http://www.pil-network.com/resources/tools>
- Moe, M., & Bailey, K. L.r.(1999). *The Book of Knowledge: Investing in the Growing Education and Training Industry*. San Francisco: Merrill Lynch and Co., Global Securities Research and Economic Group, and Global Fundamental Equity Research Department.
- Molnar, A. (1996). *Giving Kids the Business: The commercialization of America's schools*. ERIC.
- Morozov, E. (2012). *The net delusion: The dark side of internet freedom* Public Affairs.
- Mosco, V. (2004) *The Digital Sublime*. Cambridge: The MIT Press.
- Mosco, V. (2000). Introduction: Myth-ing links: Power and community on the information highway. In M. Moll and L.R. Shade (Eds.), *E-commerce vs. e-commons: communications in the public interest*, Ottawa: Canadian Centre for Policy Alternatives.
- Mosco, V., and Schiller, D.(2001) *Continental Order?: Integrating North America for Cybercapitalism*. Lanham,: Rowman & Littlefield.

- Mosco, V. (2009). *The Political Economy of Communication*. London. Sage Publishing.
- Newman, J. (2001) *Modernising Governance*, London: Sage
- Partnership for 21st century skills. (2014). Retrieved July 20, 2013, Retrieved from <http://www.p21.org/>
- Robertson, S., Mundy, K., & Verger, A. (2012). *Public private partnerships in education: New actors and modes of governance in a globalizing world* Edward Elgar Publishing.
- National Defense Education Act. Princeton. Retrieved on July 18, 2013 from http://www.princeton.edu/~achaney/tmve/wiki100k/docs/National_Defense_Education_Act.html
- OECD (Organisation for Economic Co-operation and Development). (2008). *Public Private Partnerships: In Pursuit of Risk Sharing and Value for Money*, Paris: OECD.
- OECD (Organisation of Economic Co-operative Development) (2010), *Education at a Glance 2010: OECD Indicators*, Genva: OECD.
- OECD (Organisation of Economic Co-operative Development). (2013). Internet economy: Key ICT indicators. Retrieved July 20, 2013, Retrieved from <http://www.oecd.org/sti/ieconomy/oecdkeyictindicators.htm>
- U.S Congress, Office of Technology Assessment Archive (1982). Retrieved February 16, 2014 from <http://ota.fas.org/>
- Oppenheimer, T. (2003) *The Flickering Mind*. New York: Random House.
- (2013) Pathways in Technology Early College High School. Retrieved on June 27, 2013 from <http://www.ptechnyc.org/site/default.aspx?PageID=1>
- Patrinos, H. A., Osorio, F. B., & Guáqueta, J. (2009). *The role and impact of public-private partnerships in education* World Bank Publications.
- Paulson, A. (2011). How can US schools reinvent themselves? *CSMonitor*. Retrieved March 16, 2014 from <http://www.csmonitor.com/USA/Education/2011/0308/How-can-US-schools-reinvent-themselves>
- Picciano, A. G., & Spring, J. H. (2013). *The Great American Education-Industrial Complex: Ideology, technology, and profit* Routledge.

- Ravitch, D. (2011). *The death and life of the great american school system: How testing and choice are undermining education* Basic Books.
- Ravitch, D. (2013). *Reign of error: The hoax of the privatization movement and the danger to america's public schools* Random House LLC.
- Ravitch, D. (2014, March 28). *Public Schools for Sale? (Bill Moyers, Interviewer) [Audio file]*. Retrieved from <http://billmoyers.com/episode/public-schools-for-sale/>
- Roberts, E. & Eesley, C. (2009). *Entrepreneurial impact: Role of MIT*. Kansas City, MO. Retrieved July 20, 2013 from <http://dc.mit.edu/sites/default/files/MIT-impact-full-report.pdf>
- Robertson, S. L., Mundy, K., Verger, A., and Menashy, F. (2012) *Public Private Partnerships in Education: New Actors and Modes of Governance in a Globalizing World*. Cheltenham: Edward Elgar.
- Rubin, H. J., & Rubin, I. S. (2012). *Qualitative interviewing: The art of hearing data* Sage Publications.
- Savas, E. S., & Savas, E. S. (2000). *Privatization and public-private partnerships* Chatham House New York.
- Saltman, K. (2011). From carnegie to gates: The bill and melinda gates foundation ad the venture philanthropy agenda for public education. In P. E. Kovacs (Ed.), *The gates foundation and the future of U.S. "public" schools* (pp. 1-20). New York: Routeledge.
- Saran, R. (1973). *Policy-making in secondary education: A case study* Clarendon Press Oxford.
- Semati, M. (2004). *New frontiers in international communication theory* Rowman & Littlefield Publishers.
- Rogers, E. (1982) *Diffusion of Innovation*. London: Free Press.
- Schiller, D. (1999) *Digital Capitalism*. Cambridge: The MIT Press.
- Shiller, J. (2011). Marketing new schools for a new century: An examination of neoliberal school reform in new york city. *The gates foundation and the future of U.S. "public" schools* (pp. 53-79). New York: Routeledge.
- Streeter, T. (2011). *The Net Effect: Romanticism, Capitalism, and the Internet*. New York: NYU Press.

- Sandholtz, J., Ringstaff, C., Dwyer, D., Apple Corp., Inc. (2008). Apple Classrooms of Tomorrow Research. Retrieved on July 10, 2013 from, <http://www.apple.com/euro/pdfs/acotlibrary/rpt10.pdf>
- Servaes, J. & Malikhao, P. (2008). Development Communication approaches in an International perspective. In J. Servaes (ed.) *Communication for development and social change*. Thousand Oaks, CA: Sage.
- Schifter, C. (2008). A Brief History of Computers, Computing in Education, and Computing in Philadelphia Schools. Philadelphia: Temple University.
- Shirky, C. (2010). *Cognitive surplus: Creativity and generosity in a connected age* Penguin UK.
- Simon, S. (2012). Private firms eyeing profits from U.S. public schools. Retrieved on July 18, 2013 from <http://www.reuters.com/article/2012/08/02/usa-education-investment-idUSL2E8J15FR20120802>
- Sinclair, Upton. 1923. *The goose step: A study of American education*. Pasadena, CA: Privately published.
- Statistics United States (2011) Financial and Human Resources Invested in Education Retrieved July 18, 2013 from <http://www.oecd.org/education/skills-beyond-school/48630868.pdf>
- Statistics United States (2013) *Education at a Glance 2013: OECD Indicators*. Retrieved March 8, 2013 from <http://www.oecd.org/edu/United%20States%20EAG2013%20Country%20Note.pdf>
- Srivastave, P. and Oh, S. (2012). Private foundations, philanthropy and partnership in education and development: Mapping the terrain. *Public Private Partnerships in Education* (pp.128-157). Northampton: Edward Elgar Publishing Limited.
- Sussman, G. (1997) *Communication, Technology, and Politics in the Information Age*. Thousand Oaks: SAGE Publications.
- Taub, L. E., & Schiller, D. (2001). Networking the north american higher education industry. *Continental Order?: Integrating North America for Cybercapitalism*, , 163.
- U.S. Department of Education, No Child Left Behind Act Secondary and Education Act (ESEA). Ed.Gov. Retrieved July 18, 2013, from <http://www2.ed.gov/nclb/landing.jhtml>
- U.S. Department of Education, SAT Performance Report, Doe.edu. Retrieved February 16, 2014 from

http://profiles.doe.mass.edu/sat/sat_perf_dist.aspx?orgcode=00350657&orgtypecode=6&

- U.S. Department of Education, Advanced Placement Performance, Doe.edu. Retrieved February 16, 2014 from http://profiles.doe.mass.edu/adv_placement/ap_perf_dist.aspx?orgcode=00350657&orgtypecode=6&
- U.S. Department of Education, Graduation Rate, Doe.edu. Retrieved February 16, 2014 from http://profiles.doe.mass.edu/grad/grad_report.aspx?orgcode=00350657&orgtypecode=6&
- U.S. Department of Education, Plans of High School Graduates, Doe.edu. Retrieved February 16, 2014 from <http://profiles.doe.mass.edu/profiles/student.aspx?orgcode=00350657&orgtypecode=6&leftNavId=307&>
- U.S. Department of Education, State Standardized Test Performance, Doe.edu. Retrieved February 16, 2014 from <http://profiles.doe.mass.edu/mcas/growth.aspx?linkid=47&orgcode=00350657&fycode=2013&orgtypecode=6&>
- U.S. Department of Education, General. Doe.edu. Retrieved February 16, 2014 from <http://profiles.doe.mass.edu/profiles/student.aspx?orgcode=00350657&orgtypecode=6&>
- U.S. Department of Education, School Report Card. Doe.edu. Retrieved February 16, 2014 from <http://profiles.doe.mass.edu/accountability/report/school.aspx?linkid=31&orgcode=00350657&orgtypecode=6&>
- van Fleet, J. (2012). A disconnect between motivations and education needs: Why American corporate philanthropy alone will not educate the most marginalized. *Public Private Partnerships in Education* (pp.158-181) Northampton: Edward Elgar Publishing Limited.
- VOA News. (2011). Cuts in education force teacher layoffs in California. *Voice of America*. Retrieved February 16, 2014 from <http://www.voanews.com/content/cuts-in-education-force-teacher-layoffs-in-california-121250444/138934.html>
- Warschauer, M. (2004). *Technology and social inclusion: Rethinking the digital divide*. MIT Press.

- Weil, D. K. (2002). *School vouchers and privatization: A reference handbook*. Santa Barbara, CA: Abc-clio.
- White House Press. (2014). Educate to innovate. Retrieved March 20, 2014, Retrieved from <http://www.whitehouse.gov/issues/education/k-12/educate-innovate>
- White, P., & Selwyn, N. (2013). Moving on-line? an analysis of patterns of adult internet use in the UK, 2002–2010. *Information, Communication & Society*, 16(1), 1-27.
- Wiberg, K. (1995) An historical perspective on instructional design: is it time to exchange Skinner's teaching machine for Dewey's toolbox (pp.385-391) Hillsdale: New Jersey.
- Yin, R. (1984). *Case study research: Design and methods* (1st ed.). Beverly Hills, CA: Sage Publishing.
- Yin, R. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks, CA: Sage Publishing.
- Zhao, Y., & Chakravartty, P. (2007). *Global communications: Toward a transcultural political economy* Rowman & Littlefield Publishers.
- Zwick, R., & Sklar, J. C. (2005). Predicting college grades and degree completion using high school grades and SAT scores: The role of student ethnicity and first language. *American Educational Research Journal*, 42(3), 439-464.