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AN EXAMINATION OF DATA MANAGEMENT SYSTEMS AND UTILIZATION-FOCUSED PARTICIPATORY EVALUATION

Syreeta Skelton

ACCEPTANCE

This dissertation, AN EXAMINATION OF DATA MANAGEMENT SYSTEMS AND UTILIZATION-FOCUSED PARTICIPATORY EVALUATION by SYREETA N. SKELTON-WILSON, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree Doctor of Philosophy in the College of Education & Human Development, Georgia State University.

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ABSTRACT

An EXAMINATION OF
DATA MANAGEMENT SYSTEMS
AND UTILIZATION-FOCUSED PARTICIPATORY EVALUATION
by
Syreeta N. Skelton-Wilson

Evaluations benefit immensely from technological innovations. Yet there is a lack of clear models and examples of how to apply and use technology to enable evaluation. This thwarts evaluators' ability to use, build capacity, and engage intended users and stakeholders. The purpose of this study was to examine the role of technology in utilization-focused participatory evaluation practice. To examine a multi-year evaluation that incorporated various types of technologies in order to increase participation, build evaluation capacity, and facilitate use among stakeholders, I analyzed a purposeful sample of administrative records, archived documents, and surveys data. The data were obtained from a multi-year process and outcome evaluation of a statewide afterschool program conducted to assess the effectiveness of remediation and extramural programming on academic achievement. Unobtrusive analytic techniques were conducted sequentially over three separate phases. The first phase involved content analysis of archival documents. The second phase involved an examination of co-occurring codes applied to the archival documents. Findings from phases 1 and 2 were used to describe relevant factors and the relationships between key factors related to the implementation of a data management technology and evaluation participation, capacity, and use. In the third phase, the reliability of common and related factors were examined using secondary survey data. Findings showed moderate positive relationships among indicators of data management system implementation and evaluation capacity building, evaluation use,

and evaluation participation among stakeholders. This work illustrates that evaluator practice should more closely attend to the role that technology plays in evaluation. In addition, it allows for the expansion of commonly understood applications in evaluation (i.e. data collection) and how they incorporate technology for the purpose of making evaluation more useful and engaging for stakeholders.

AN EXAMINATION OF DATA MANAGEMENT SYSTEMS AND UTILIZATION-FOCUSED PARTICIPATORY EVALUATION

by

Syreeta N. Skelton-Wilson

A Dissertation

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Since I was a young girl, I have always been fascinated by innovation and technology and how they change the way we live, communicate, conduct business, socialize, work, and learn. I was introduced to some of the most transformative technologies, including personal computing systems, telecommunication and data networks, and social media very early in life (before I was school aged) by my father and uncles who worked on the cutting edge of the financial, medical, telecommunications, and transportation information systems. Through them, I not only saw how technological innovations were opening the doors for minorities to have opportunities for gainful

employment and lucrative careers where blacks were barely represented, but it also laid a foundation for my longstanding curiosity about technology and its cross disciplinary multisectoral, and pervasive nature touching all aspects of society. From these experiences, I knew that I wanted to learn more about technology and do work that would benefit from technological innovations; however, I wanted to do this work in the public sector where I could contribute to in small way to addressing social and political issues in society.

Not only did the black men in my family illustrate that technology was a way to break the glass ceiling in corporate America, so did my grandmother, who was among the first women in the state of New York to be certified as a medical transcriptionist where she was responsible for helping to install systems that would be the precursor to electronic health records that we know today. My mother, who was an educator, also nurtured and encouraged my interests in technology, despite the prevalent underrepresentation of black women in the field at the time, by helping me apply for and be accepted to a number of summer science, engineering, technology, and mathematics—or STEM—programs at local universities and colleges in Long Island, New York, where I grew up. It was at these institutions that I was exposed further to women and other minorities who were making great discoveries and contributions to technological advancements. Among these great scholars were Henry Thomas Sampson, Jr., a prolific black nuclear engineering pioneer of technology that is used in modern cell phones, and Dr. Shirley Ann Jackson, another black physicist famous for her breakthrough scientific research, enabled the advent of the portable fax, touchtone telephone, solar cells, fiber optic cables, caller ID, and call waiting. I also learned about Marie Van Britton Brown, a

black nurse from my home state, who created the two-way communication and surveillance features that make up today's modern security systems, and Mr. Otis Boykin, an electrical engineer who created the control unit for the pacemaker and resistors that are used products from televisions and IBM computers to military missiles.

This exposure to technology as a young girl piqued my interest in understanding more about the relationship between technologies and their users, and how technology changes and impacts us. It also stirred in me the desire to follow in the footsteps of my great-grandmother and attend Spelman College, a historically black college, in the same tradition of many black scientists like those I learned about during my summer STEM camps in Long Island. My father, who was a telecommunications information system project manager for companies such as Westinghouse, General Motors, and IBM, occasionally would take me to his office, where I would watch him create communication networks using large computers that filled entire rooms. He often would explain in great detail how the machines worked as well as explained the mathematics that made it all work together. My father also brought computing technologies into our home when I was a toddler in the early 80s, so, like all children today, I grew up with technology and have not known life without it. By the time I was a preteen, my dad was telling me that someday we would have the capability to video conference, and now we do. But back then, cellphones were the size of today's tablet computers, and I could barely conceive of the fantastical idea that someday there would such a thing as an iPhone that would enable people to see each other on a screen when speaking on the phone. Nor could I image in my wildest dreams that a telephone would someday turn into a small computer!

Today, technologies and mobile computing are not only a reality, they have transformed every facet of life so drastically it is nearly impossible for many to remember or fathom life without it. The exponential growth and evolution of technology is as embedded in the human experience as many other phenomena from culture to language to education. As technology evolves with society to meet the ever-changing context in which we live, the nature of our relationship with technology shifts and changes. The study of the ways in which people interact with and use technology is the next step to better understanding of the roles and needs that technology fulfills in our lives. This dissertation reflects my interest in understanding technology and the way it affects me as an evaluator of public programs and policies.

Hearing about new technologies from the men whom I idolized exposed me to innovations that stretched my mind and imagination. To me, these black men and their work were helping to open opportunities for others, which shaped my view that information technologies have the potential to be a great equalizer. Today technologies such as mobile phones and computing devises, video conferencing, and artificial intelligence machines are commonplace in society, yet the full expanse of the information age has still not come into view. The pervasiveness and influence of social media has been so profound that it has transformed how people interact, communicate, access information, create entire industries, such as information security, and completely altered other industries and professional practices, such as journalism.

In the information age, such technologies continue to evolve, and humans adapt to incorporate these innovations into our way of life and our interactions with each other and the environments in which we live. Due to the incredible impact that technology has

wielded over society for the past 60-plus years, studies of how technology influences certain aspects of human behavior are also more commonplace. This dissertation is one of a few empirical studies that explore how technology has changed program administration within the context of public education. As an evaluator working in this field, I have worked throughout my career to adapt to new technologies while maintaining a strong foundation of the standards and theories that shape evaluation practice.

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LIST OF ABBREVIATIONS

21st CCLC – 21st Century Community Learning Centers

APR – Annual performance report

DMS – Data management system

DMSE – Data management system evaluation

EAC – Evaluation advisory committee

ECB – Evaluation capacity building

ESEA – Elementary and Secondary Education Act

GPRA – Government Performance and Reporting Act

GSU – Georgia State University

IRB – Institutional Review Board

ITMRA – Information Technology Management Reform Act

LEA – Local education agency

NCLB – No Child Left Behind

OMB – Office of Management & Budget

PBDMI – Performance-Based Data Management Initiative

PE – Participatory evaluation

PPICS – Profile and Performance Information Collection System

PRA – Paperwork Reduction Act

SEA – State education agency

UFE – Utilization-focused evaluation

UFPE – Utilization-focused participatory evaluation

US ED – United States Department of Education

CHAPTER 1

INTRODUCTION

> . . . we have done little to exploit the use of technology in the evaluation and that, as one learning strategy, it offers many possibilities.(Preskill, 2008, p. 132)

Improving evaluation use has long been a priority for the field of evaluation and its key stakeholders, especially for educational programs. Intended users in both the public and private sector depend on evaluations to help inform decisions about programs and policies that address social and societal issues, particularly those related to K–12 education (Kaplan & Shaw, 2004). Because evaluations provide critical data, information, and evidence that inform decisions about social interventions, evaluators and educational researchers spend considerable time and resources to improve evaluation practices and infrastructure. Ongoing examination of evaluation practice has helped to improve our understanding of the factors that shape evaluation use within the field. Still, information systems play a critical role in strengthening evaluation practices, capacity, and infrastructure and fostering evaluation use. In this introduction to my inquiry surrounding the linkages between evaluation practice and technology, I outline the specific purpose and context surrounding the study, reveal the questions and methods used to address them, and make the case for studying the role of technology in order to improve evaluation practice.

As a central part of the evaluation infrastructure for many programs, information systems are prevalent in evaluation practice and serve a wide range of needs of various evaluation stakeholders. Some of the most common evaluation approaches (e.g., participatory evaluation (PE), utilization-focused evaluation (UFE), evaluation capacity

building (ECB)) highlight information systems (Stockdill, Baizerman, & Compton, 2002; Preskill & Boyle, 2008), yet few studies have explicitly examined how they influence or affect evaluation practices and results (Mookherji, Mehl, Kaonga, & Mechael, 2015). The lack of empirical studies on information technology's effect on program evaluation limits evaluators' ability to maximize the effectiveness of such tools to aid in achieving evaluation aims. As such, it is necessary to examine the cross-section of information technology and program evaluation practice. By putting more intense focus on the use of information systems in evaluation practice, evaluators can learn about how to use information technology in their work and achieve better evaluative outcomes for stakeholders.

This dissertation presents an exploratory investigation of the roles and influence of information systems on evaluation practice. It examines how these information systems contribute to the increase of our knowledge and understanding of how they change the access, management, dissemination, and use of evaluative data that inform programs and policies. This study builds upon existing evaluation approaches and models of practice by making more explicit the ways in which information technology contributes to the intended aims of evaluation practice.

Over time, technological advancements have contributed to increased and more diverse applications of information systems in program evaluation work. Increasingly, more evaluators capitalize on increased efficiencies such as: cost savings, improved data collection and other efficiencies, and capacity improvements related to data collection, information gathering, and knowledge management (Mookherji, Mehl, Kaonga, & Mechael, 2015; Preskill, 2008; Taylor-Powell & Boyd, 2008). Information systems have

enhanced the ways that evaluators create, archive, and share data, information, and knowledge. Information systems have allowed for more access and use evaluation, data, and information generally across individuals and organizations in ways that require geographic boundaries to be less obstructive. Information systems have also helped evaluators gain access to data, information, and knowledge that is more automated and immediately accessible (Rosenberg, 2001; Santo, 2005). However, there remains a persistent lack of critical analysis of how technology operates within some of the most widely used evaluation models, such as utilization-focused evaluation and participatory evaluation (UFPE) models.

While models for using a variety of educational technologies to enhance learning in K–12 education exist, the field continues to lack of resources and applied examples that convey how to apply and use information systems to facilitate the evaluation of educational programs. Rather, the body of literature that does exist largely discusses key indicators for assessing technology in K–12 pedagogy, such as: teacher and student proficiency to use the technology, integration into the teaching/learning environment and alignment with teaching and learning standards, student assessment, administrative processes, and instructional and administration evaluation (U.S. Department of Education, 2002). Furthermore, some researchers (Amos & Cousins, 2007; Cousins & Leithwood, 1986; Preskill, Zuckerman, & Matthews, 2003) articulate the impacts of information systems on educational outcomes. In evaluation practice, however, UFPE models that focus on building evaluation knowledge, skills, ability, and capacity within organizations only account for the critical roles of evaluators, stakeholders, and evaluation design characteristics. While these models acknowledge that technology

functions as a part of these evaluations, they do little to exhibit how technology has transformed the landscape of evaluation. For example, Preskill and Caracelli's (1997) and Fleischer and Christi's (2009) surveys of American evaluators asked about factors that influence evaluation use and perceptions of evaluators' roles. These studies, however, did not include items on "technology in use." Brandon and Singh's (2009) meta-research review of f literature on contexts and factors relevant to different types of evaluation use did not give any attention to technology. On the other hand, Galen & Grodzicki (2011) discussed in detail the implications of the fast-paced growth of emerging technologies on evaluation practice. They wrote, "…success of program evaluations will depend on the evaluators' abilities to leverage future technologies to produce and disseminate knowledge in an accessible and actionable form" (Galen & Grodzicki, 2011, p. 123).

Additionally, applications of evaluation capacity building (ECB) in the field, document the role of logic models (Arnold, 2006), one-on-one technical assistance, group collaboration, and train the trainer models (Huffman & Thomas, 2008; Nacarella, Pirkis, Kohn, Morley, Burgess, & Blashki, 2007; and Building; Stevenson, Flovin, Mills, & Andrade, 2002). Nacarella et al. (2007) included an examination of a Web-based system to facilitate evaluation design, data collection/entry, and analysis, which indicated the presence of organizational learning principles undergirding participatory and collaborative research approaches. Preskill (2008) discussed ways that evaluators can use of technology to enhance learning and ultimately contribute to a "social epidemic" of evaluation and particularly to facilitate evaluation use. Of great importance and relevance therefore is the need to articulate the role of technology as a primary tool for improving

communication, sharing and managing intellectual property, conducting analyses, and providing access to data among a learning community or organization.

Purpose

Because people perceive education to be solution to many social ills, the examination of how utilization-focused participatory outcome evaluation (UFPE) affects educational outcomes is of increasing importance. This study aims to provide insights on how to leverage technology tools, such as online systems for data collection and reporting, to grow capacity, participation, and use in the evaluation of publicly funded afterschool and out-of-school-time programs. This work intends to inform the adaptive multi-purpose framework for evaluation capacity building and participatory-focused evaluation in hopes that the findings may help evaluators understand better how to leverage technology in evaluation (i.e., online data collection and reporting) to grow evaluation capacity, participation, and use in public programs.

Design

As an evaluation practitioner, I want to understand better the role that technologies like DMS play in evaluation practice and the use of evaluation findings in order to inform my future evaluation practice. The evidence on best practices in evaluation vaguely speaks to the intersection between technology and participatory evaluation practice and still it is mostly absence from the tools (e.g., Utilization-Focused Evaluation Checklist) and literature geared towards informing evaluation practice. Since the research on the role of technology like DMS in evaluation remain sparse, I designed a pragmatic exploratory study that used data from a UFPE evaluation of an afterschool program to answer research questions about the role of DMS on evaluation practice.

The original afterschool program evaluation took place during a time when the knowledge base around participatory evaluation theory began to mature, and evaluation theorists presented varying models of participatory evaluation to the field. As the relevant factors that influence evaluation use came to the forefront, best practices around participatory-based evaluation models emerged to articulate best practices for evaluation. Researchers coined and defined models for stakeholder or participatory evaluation, evaluation capacity building, and utilization-focused evaluation, and operationalized these best practices in tools for practitioners (e.g., Participatory Evaluation Checklist). Simultaneously, more afterschool programs began using DMS technology and more researchers published findings from afterschool program evaluations that demonstrated significant program impacts for afterschool programs. Studies about afterschool evaluation began to link youth outcomes like academic improvement, improved social development, and increase proactive behaviors to afterschool program participation. Many of these studies were possible because more programs were able to link individual student data on program participation and outcomes.

In my experience as an evaluator, finding time and resources to conduct research on evaluation practice is challenging because funders prefer to devote limited resources to programming. Therefore, I designed the study around my intention to use my experience working on a UFPE of an afterschool program that involved of DMS technology to delve explore the relationship between DMS and evaluation practice. I designed my study to use existing data and nonintrusive methods to answer questions about the role between DMS and evaluation practice. Because the study was exploratory, I used a sequentially phased approach to analysis that allowed for the next steps in my

study to be informed by what was learned in the previous phase. In addition, my selection of analytic methods was informed by the data available from the archive. Thus, an initial step in conducting the study involved data mining to assess the data and determine the initial steps to analysis. Subsequent phases of the study involved mixed methods analyses, including qualitative content, thematic, and co-occurring analyses of the archival document and quantitative correlation analyses of the secondary survey data.

Data Sources

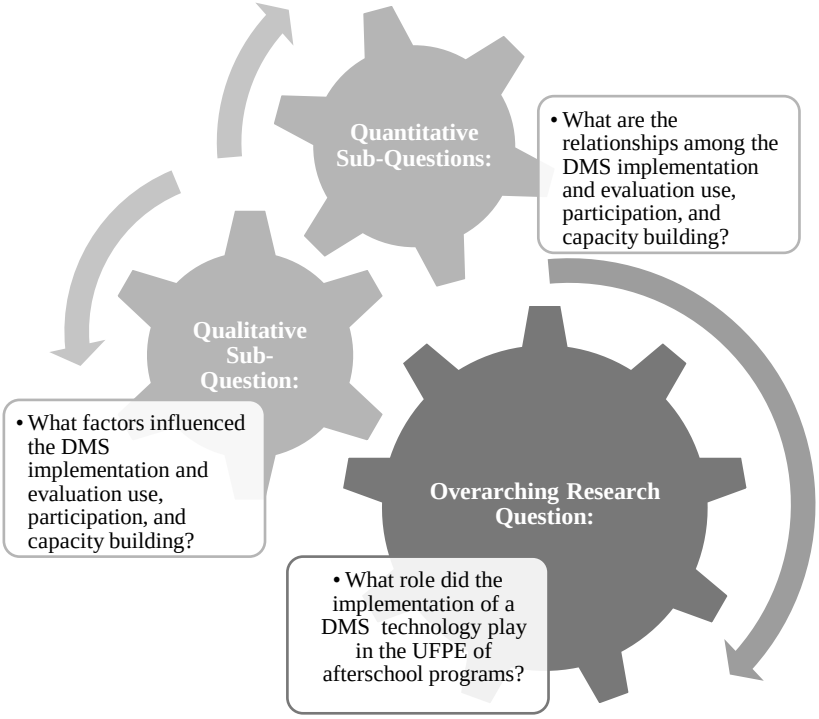
The secondary data used for this study came from an electronic archive preserved from the previously conducted statewide afterschool program evaluation that involved a DMS implementation. The data used from the original study archive included documents and DMS user surveys. The documents include artifacts preserved from the original study including evaluation reports, communication records, fiscal information, guidance materials, interview transcripts, presentations, and other programmatic and evaluation administrative records. The secondary survey data included a batch of responses (n=115) to the DMS user survey conducted during the original study available from the archive. The survey data reflected the experiences of afterschool program staff in using the database in their work with the afterschool program.

Research Questions

Figure 1 outlines the three research questions that guided this study. These research questions aimed to draw from the mixed set of qualitative and quantitative data taken from the archive to describe the role that technology played in a multi-site statewide participatory outcome evaluation. With these questions, I intended to explore the relationships between UFPE practice, technology, and intended evaluation outcomes,

such as level of evaluation engagement, changes in evaluation capacity, and achievement of intended evaluation use among users. Lastly, the evaluation questions explored differences in the intended evaluation outcomes among different groups of intended users and users of the technology.

Figure 1. Research Questions about the Role of Technology in the Utilization-Focused Participatory Outcome Evaluation of Georgia's 21st CCLC Afterschool Program



Each of the three questions differed regarding the types of data and analyses used to answer the question as well as the type of information that they produced about the relationship between technology and PE. One question relied solely on qualitative data and methods and intended to garner information that would describe the phenomena of technology in a UFPE study. The second question relied solely on quantitative data and

methods, and compared the difference in achieved evaluation outcomes across different groups of intended users. The third question used a mix of data and methods to explore the presence and strength of the relationships between emergent features and characteristics of the technology and PE.

Methods

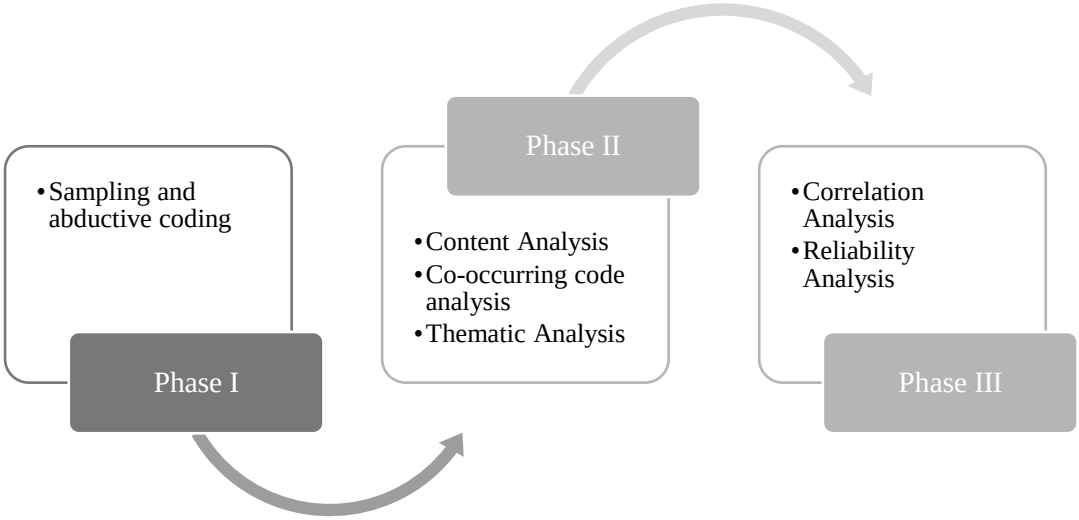
To carry out this research, I adopted a mixed-methods approach involving qualitative (content and thematic analysis of archived documents) and quantitative methods (correlation and reliability analyses of secondary survey data). A mixed methods design was selected because it allows for a more in-depth analysis, by involving multiple types of data. The sequencing of the analysis that I briefly introduced in the previous section on the study design allowed the results from one method to help develop and inform procedures and findings from the other methods used in subsequent phases of the research (Johnson & Obwuegbuzie, 2004). The application of mixed methods in this study was emergent and manifested in a three-part sequential analysis (refer to figure 2). The results presented in this paper integrate the results in the display and interpretation of the overall findings. By allowing for the integration and synthesis of findings across types of data and methods of analysis, both quantitative and qualitative data helped to strengthen the results.

Context

The impetus of this study derived from my personal experiences as an evaluator where I have and continue to work with data management system to house, process, and report programmatic records associated with management of participants, coordination of services, and performance measurement and evaluation. This research looks at the

implementation of a data management system for a statewide afterschool program for which I served as a member of the external evaluation team. In this research, I used secondary data from a four-year, federally-funded statewide afterschool program in Georgia to answer my research questions pertaining the role of DMS in UFPE practice.

Figure 2. Sequence of Emergent Mixed Methods Analyses



The evaluation team from Georgia State University (GSU) conducted the statewide evaluation of the afterschool program during an unprecedented expansion of afterschool programs across the U.S. between 2005 and 2009. In order to meet increasing accountability requirements for the program, the evaluation group designed systems to support the collection, management, and reporting of program performance and outcomes. Policies surrounding the expansion of afterschool programs governed the adoption of such systems across the federal, state, and local levels of afterschool programming. The following sections discuss the context of afterschool programs and describe the setting of the statewide afterschool program, which was the subject of this inquiry.

Afterschool programs are a prime setting for the delivery of a multitude of public interventions. The content of this programming is often interdisciplinary, involving aspects of academics; health and nutrition; social, emotional, and professional development; and civic engagement (Afterschool Alliance, 2019; Lauer Akiba, Wilkerson, Apthorp, Snow, & Martin-Glenn, 2006; Little & Harris, 2003; Little, Harris, & Bouffard, 2004). Afterschool programs deliver essential services to families and engage youths in activities that support positive developmental (Durlak & Weissberg, 2007; LeCroy, 2003; Taylor, LoSciuto, Fox, & Hilbert, 1999), academic (Reisner, 2004; Vandell, Reisner, & Pierce, 2007; Reisner, White, Birmingham, & Welsh, 2001; White, Reisner, Welsh, & Russell, 2001; Klein & Bolus, 2002; Lauer, Akiba, Wilkerson, Apthorp, Snow, & Martin-Glenn, 2006) and health outcomes (Beets, Beghle, Erwin, & Huberty, 2009; Little, Wimer, & Weiss, 2007), such as lower obesity rates (Mahoney, Lord, & Carryl, 2005). Because afterschool programs offer a variety of interdisciplinary sources of support for children and families (e.g., child nutrition, academic enrichment and remediation, workforce development), numerous entitlements, discretionary, and block or formula federal programs are available from the U.S. Departments of Education, Agriculture, and Health and Human Services, and the U.S. Corporation for National and Community Service. Moreover, various youth risk factors, including poor academic achievement; juvenile crime; and experimentation with drugs, alcohol, cigarettes, and sex, are associated with unstructured and unsupervised time spent after school hours (Goldschmidt, Huang, & Chinen, 2007; Philliber, Kaye, & Herrling, 2001; Philliber, Kaye, Herrling, & West, 2002). Adolescents who do not participate in afterschool programs are nearly three times more likely to skip classes than teens who do participate

in afterschool programs (Hoover-Dempsey, Walker, Sandler, Whetsel, Wilsons, & Closson, 2005). They are also three times more likely to use marijuana or other drugs, and they are more likely to drink alcohol, smoke cigarettes, and engage in sexual activity (Goldschmidt, Huang, & Chinen, 2007; Philliber, Kaye, & Herrling, 2001; Philliber, Kaye, Herrling, & West, 2002).

Need for Afterschool Programs

Research and evaluations of afterschool programs that increasingly demonstrated the numerous benefits of these programs helped fuel and justify increased spending on afterschool programs to expand their reach. Research indicates that afterschool programs positively affect social, safety, and family outcomes by providing students safe spaces to engage in constructive activities linked to a number of protective factors, reduced risk factors, and improved education outcomes. For example, researchers have found that afterschool participants tend to have a stronger sense of security (Huang, Coordt, Torre, Leon, Miyoshi, Perez, & Peterson, 2007), reduced language barriers among those who are non-English speaking (Huang, Leon, La Torre, & Mostafavi, 2008), improved self-efficacy (Huang, Gribbons, Kim, Lee, & Baker, 2000; Huang, Miyoshi, La Torre, Marshall, Perez, & Peterson, 2007), healthier lifestyles (Mahoney et. al., 2005), and reduced risk for delinquency and juvenile crime (Goldschmidt, Huang, & Chinen, 2007; Huang, Choi, Henderson, Howie, Kim, Vogel, Yoo, & Waite, 2004)

In addition to engaging in more pro-social and protective behaviors, afterschool program participants have been found to participate more in school and learning, perform better on standardized academic tests, and have better grades and school attendance. In addition, they have lower dropout rates (Goldschmidt, Huang, & Chinen, 2007; Huang et

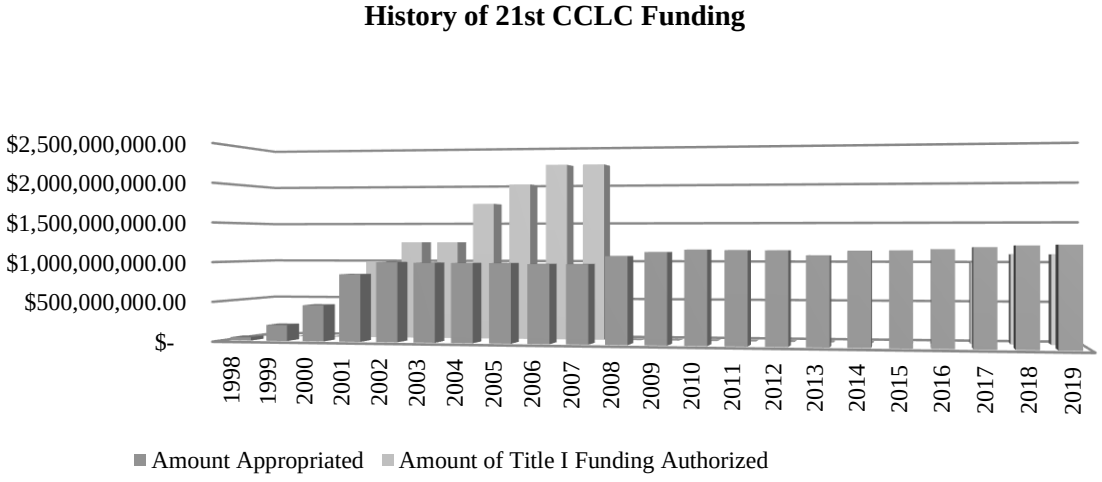
al., 2000; Huang, Kim, Marshall, & Perez, 2005; Huang, Leon, Harven, La Torre, & Mostafavi, 2009; Huang, Leon, & La Torre, 2011; Huang, Miyoshi, et al., 2007). For these reasons, afterschool programs are essential to youth and their families.

National Expansion of Afterschool Programs

Afterschool programs have been implemented and expanded to improve academic, health, and developmental outcomes and to prevent risky behaviors and adverse outcomes for school-aged youths (Lauer Akiba, Wilkerson, Apthorp, Snow, & Martin-Glenn, 2006). Afterschool programs serve approximately 10.2 million children across the nation (or 18% of the population) per year (Afterschool Alliance, 2019). Despite the diverse sources of funding for afterschool programs, still more than 15.1 million children lack access to programs after school. With a gap between the need for and availability of afterschool programming throughout the country, federal funding sources such as 21st Century Community Learning Centers (21st CCLC) are essential to help states and local communities establish and sustain afterschool programs and to reach those children who most need these programs (Afterschool Alliance, 2013). According to recent estimates, 11.3 million children across communities in the United States take care of themselves after the school day ends (Afterschool Alliance, 2016). Researchers estimate that just 25% to 30% of all American youths participate in organized afterschool programs between three and five afternoons each week (Afterschool Alliance, 2013; Halpern, 2002). The parents of another 19.4 million children that say their children would participate in an afterschool program if one were available (Afterschool Alliance, 2016). Indeed the shortage of available afterschool programs to meet the demand is a critical issue for children and families today.

The 21st CCLC initiative is the only federal funding source dedicated exclusively to afterschool programs. For more than a decade, funding for afterschool programs substantially increased —from less than a half $1 million in federal appropriation in 1997 to $1.6 billion in 2015 and 2016 (refer to Figure 3) (Afterschool Alliance, 2013; Peterson, Fowler, & Dunham, 2014). Originally passed with broad bipartisan support in 2001 as Title IV, Part B of the No Child Left Behind (NCLB) Act (Pub.L. 107-110), Congress appropriated $991.07 million to fund a national afterschool program. The appropriation authorized by the U.S. Department of Education (US ED) awarded states funding to implement afterschool programs, which required evaluation and performance monitoring. By 2012, there were 4,619 21st CCLC local grantees funding afterschool and summer programs for almost 11.7 million children and youths in 11,068 school-based and community-based centers across the country (Afterschool Alliance, 2013; Dinarski, 2015). The program was in such high demand that only one-third of all local requests for funding was met, leaving "$4 billion in local grant requests unfilled over the last 10 years (O'Donnell & Ford, 2013, p. 3 (as cited in Peterson, Fowler, & Dunham, 2014)).

Figure 3. History of 21st CCLC Funding



Note: Figure courtesy of the Afterschool Alliance, 2019).

Outcomes for Title I Funded-21st CCLC Afterschool Programs

Because of the essential role that afterschool and out-of-school-time programs play in supplementing youth development and academic enrichment opportunities for K–12 students, these programs are in high demand. Sustaining these programs, however, requires extensive resources. In order to ensure that these resources are available, funders require empirical evidence that justifies the need for these programs and demonstrates their effectiveness as a means to continue to increase resources and support for afterschool program funding. As such, educational researchers have an essential role in advancing and building upon the evidence base needed to inform funders and other key decision-makers about the critical work happening afterschool on behalf of the nation's youth. As researchers work to advance and adapt their approaches to evaluate the afterschool program to the changing contexts of programs and needs of the populations they serve, both educational challenges and evidence-based solutions are identified, making intended impacts in education more informed.

Some of the outcomes reported from the national 21st CCLC evaluation (afterschool programs receiving federal funds) showed similar results, such as improved grades in reading and math and performance on state assessments (U.S. Department of Education, 2005). Specifically, one study of roughly 3,000 elementary and middle school students found that regular afterschool attendance resulted in gains of up to 20% on standardized math test scores (Vandell, Reisner, & Pierce, 2007). Another study found that since initial expansion of the 21st CCLC program, the number of students who improved their academic performance annually has increased (Afterschool Alliance,

2013; Little, Wimer, & Weiss, 2007). Another study found that the length of time spent in in afterschool significantly correlated with educational outcomes (Afterschool Alliance, 2006; Reisner, 2004).

Current evaluations in afterschool programming also use these data to improve and increase understanding of effective program and service delivery practices. These studies identified some of the characteristics useful to understanding the primary context in which 21st CCLC programs operate, including the features of high-quality afterschool programs (Granger, Durlak, Yohalem, & Reisner, 2007; Little, Wimer, & Weiss, 2007; Vandell & Pierce, 2007; Wilson-Ahlstrom & Yohalem, 2007; Yohalem & Wilson-Ahlstrom, 2007). Educational researchers have identified areas on which to focus quality improvement efforts. These areas include increasing family, school, and community linkages; and effective program administration, design/structure, planning, and implementation. Many of these studies assess afterschool program quality and measure the critical elements of program delivery. Among these critical elements are: organizational procedures and processes at the point of service delivery; the relationships between the adult activity leaders and youth participation; the quality of interactions among youths; and structural features and program characteristics that inform programming decisions and selection of implementation activities.

Afterschool program evaluators have been working to link a variety of indicators related to programming and staff and participant behaviors with a variety of intended outcomes. For example, “studies are clear that high-quality afterschool programs structured in a variety of ways bring many positive outcomes for students, including achievement regarding test scores (Durlak, Mahoney, Bohnert, & Parente, 2010 (as cited

in McElvain, 2013, p. 3). Such studies have illustrated that regular program participants tend to show improved homework completion, class participation, attendance, classroom behaviors, English and math classroom grades, and reading and math achievement scores. Indeed, the students who have higher program attendance showed the most significant improvement, though selection bias may have influenced these results (American Institutes for Research, 2012; McElvain, Maroney, Devaney, Singer, & Newman, 2014; Naftzger, Vinson, Manzeske, & Gibbs, 2011).

Other studies have focused on participation patterns to learn about those program characteristics that help facilitate the achievement of the desired program outcomes (Simpkins, Litte, & Weiss, 2004; Grander, 2008; Roth, Malone, Brooks-Gun, 2010; Fillard & Witt, 2008; Wimer, Simpkins, Dearing, Caronongan, Bouffard, & Weiss 2008). In addition, some studies investigated key features of high-quality afterschool programs for identifying areas for program quality improvement. Such studies gave specific attention to family, school, and community linkages; effective program administration and management practices; program planning and structure; and adoption of processes to support the development of positive student–student and adult–student relationships (Granger, Durlak, & Yohalem 2007; Little et al., 2007; Vandell et al., 2005; Wilson-Ahlstrom & Yohalem, 2007; Yohalem & Wilson-Ahlstrom, 2007).

Accountability Requirements for Title 1-Funded 21st CCLC Afterschool Programs

With increased spending and resources put toward afterschool programming under NCLB, more and more demands to produce desired program effects and meet expectations for accountability and performance developed around the 21st CCLC program. During this period, there was not only an expansion of afterschool programs,

but also a large investment in the evaluation of these programs. As demonstrated by the literature described in the previous section, the additional investments in afterschool program evaluation vastly contributed to the grown of the evidence base on after school.

Increased funding under NCLB and other influential federal policies fostered significant changes in the administration and management of the national afterschool program by requiring more systematic and robust federal reporting to demonstrate and manage program outcomes and performance. Under NCLB, US ED outlined the specific performance goals, measures, and monitoring procedures and requirements for program. Sweeping policy changes to make government more transparent and accountable for the costs of federal programs strongly influenced other federal policies responding to broad program issues around increased government accountability and new technology innovations. While some of these policy changes occurred well in advance of the federalization of afterschool programs, interconnections between relevant policies were present during the evaluation of Georgia's afterschool program. Figure 4 highlights specific policies relevant to the contextual factors that had broad implications across all government programs, including the 21st CCLC program.

Figure 4. Policies Governing 21st CCLC Programs

Educational Policies

2001 No Child Left Behind (20 USC. (§§ 7171 to 7176) defined the 21st CCLC afterschool program and authorized appropriations for state and local activities.

1974 Family Educational Rights and Privacy Act (FERPA) (20 USC. § 1232g; 34 CFR Part 99) outlines data protection, access, and privacy requirements for student education records.

Government Accountability Policies

1966 Freedom of Information Act (5 USC. § 552) outlines procedures required for managing government records to facilitate ease of access to federal agency records and information (U.S. Department of State, 2018).

1980 Paperwork Reduction Act (PRA) (44 USC. § 3501 et seq) authorizes the Office of Management and Budget to establish efficiency and effectiveness policies and standards around the information activities conducted by federal agencies.

1993 Government Performance and Reporting Act (GPRA) (31 USC 1101) mandates specific agency activities and products related to the management of federally funded project management such as goal-setting, performance monitoring and measurement, program evaluation, and reporting that can be used to demonstrate accountability, ensure quality, and ensure the achievement of intended outcomes.

2010 GPRA Modernization Act (31 USC. § 1120) updated GPRA by adding language to outline the use of empirical evidence about program performance be used by the congressional and executive branches as a tool in decision making to address significant issues.

Technology Policies

1996 Information Technology Management Reform Act (ITMRA) (40 USC. §5113) established standards for performance- and results-based management and evaluating information resources management practices with respect to the performance and results of investments made in information technology.

Each of these policies expanded requirements around data and information sharing, program evaluation, and other empirical inquiry across all government agencies. Some of the legislation aimed to improve the quality and efficiency of information sharing and evaluation practices, and to link to the use of technological innovations to help to foster increased transparency and efficacy of federal programs. These educational, accountability, and technology policies helped contribute to a 21st CCLC afterschool program context that was ripe for the examination of data management practices and systems. In so doing, it was possible to learn about their contribution to afterschool programs, their performance, and use of related information products.

21st CCLC Program Data Management Technology

In 2004, US ED implemented standardized performance measure requirements that included routine data collection and reporting practices. During this period, US ED

also implemented the 21st CCLC Profile and Performance Information Collection System (PPICS). US ED funded PPICS from 2005 to 2015. PPICS was a Web-based data management system (DMS) designed to capture information regarding state-administered 21st CCLC programs.

The PPICS implementation introduced significantly increased efforts on the part of state education agencies (SEA) that administer 21st CCLC afterschool programs. In order to meet the new performance measure requirements for the program, many states invested significant amounts of resources into creating their own DMS to warehouse their afterschool program data and information. As indicated in the quote below, the creation of these state-level 21st CCLC DMS resulted in increased use of national 21st CCLC program data by making it vastly more accessible and improving the consistency and quality of program data.

> To enhance accountability and data-driven best practices, Florida uses extensive data tracking and monitoring procedures. Florida's 21st Century Community Learning Centers program requires all subgrantees to submit monthly attendance numbers to the Florida Department of Education, and the Department plans site visits, program monitoring, and technical assistance accordingly. State leadership uses this information, as well as the necessary data collected through the federal 21st Century Community Learning Centers Profile and Performance Information Collection System (PPICS), to ensure that programs operate as intended. (David, Lingo, & Woodruff, 2014, p. 69)

PPICS required all funded SEAs to report data about program delivery, participation (i.e., attendance), organizational characteristics (i.e., program partners, activities, staffing), service delivery locations, and academic outcomes. PPICS annually collected aggregated center-level data submitted by the state education agency (SEA) grantees about local education agency (LEA) funding competitions, LEA organizations, annual performance, and state activities. These data allowed for the structural features of

critical factors, and program characteristics of 21st CCLC programs related to program quality and achievement of desired impacts to be examined and evaluated (Zhang & Byrd, 2013).

Once US ED released the guidance for afterschool program reporting to states, Georgia's SEA assessed state-funded local education agency afterschool programs to determine the extent to which they could meet the new reporting requirements. The assessment gathered information about the data collection, management, reporting, and evaluation practices among state-funded afterschool programs in the state. The results of the assessment showed that there was significant variation in the means employed to collect, manage, and report program and participant data among them.

Because of the findings of the pre-implementation assessment, the state education agency, or SEA, developed and began the implementation of plans to evaluate and measure the performance of the state's afterschool program. The state awarded funding to a state university to implement a DMS and to conduct formative and summative evaluations on an annual basis. In addition, the state evaluator was responsible for working with the SEA and DMS contractor to meet the federal reporting requirements.

Evaluation and DMS Technology Implementation in Georgia's Statewide 21st CCLC Program

The current study focused on Georgia's 21st CCLC program, which operated from 2004-2009. The purpose of the program was to establish or expand community learning centers in a variety of public and private organizations, including LEAs, non-profit agencies, city or county government agencies, faith-based organizations, institutions of higher education, and for-profit corporations throughout the state. The specific purpose of

each center was to provide opportunities for academic enrichment and tutorial services; to offer students a broad array of additional services, programs, and activities to reinforce and complement the regular academic program; and to offer literacy and related educational development to families of 21st CCLC students. Program activities and services focused on students who attend schools identified as "low performing" by the state. These activities were specifically designed to help students meet local and state academic standards in subjects such as reading and math.

For Georgia's 21st CCLC program, the SEA sought ways to meet the new federal reporting requirements and increase the performance measures and reporting capacity of the state and its grantees. Simultaneously, the SEA had an opportunity to conduct a rigorous outcome evaluation of its 21st CCLC program, which was not previously feasible due to a lack of available outcome data across LEA sub-grantees. The external evaluation study conducted as part of the state's newly adopted DMS and outcome evaluation aimed to measure not only the performance of the program, but also the changes in the program's overall evaluation capacity and the extent to which intended evaluation outcomes such as use and participation were achieved.

To comply with the new requirements for reporting and evaluation, the SEA reviewed data management options to improve the quality and consistency of data across the state. The findings revealed that a Web-based data management system [DMS] was the most efficient and cost-effective option for the state. The primary functions of the DMS were to (1) track attendance and services, (2) manage participant records (demographics, household, and academic information), (3) collect information on program resources (i.e., funding sources, partners, staffing), and (4) generate reports. The

data collected and reported through the DMS (i.e., student demographics and attendance, information on program resources) were essential to answering the primary evaluation questions posed by the state and to reporting on federal performance measures.

To support the implementation of the statewide implementation and DMS evaluation, or DMSE, the program established an evaluation advisory committee (EAC) comprised of LEA-level evaluators who provided LEA input into the design and implementation of the DMS and state 21st CCLC program evaluation. Sub-committees were organized around professional development, evaluation, or DMS implementation activities. Each sub-committee was critical to planning of the DMS implementation, and played a functional role in helping to develop programmatic, evaluation, and DMS guidance.

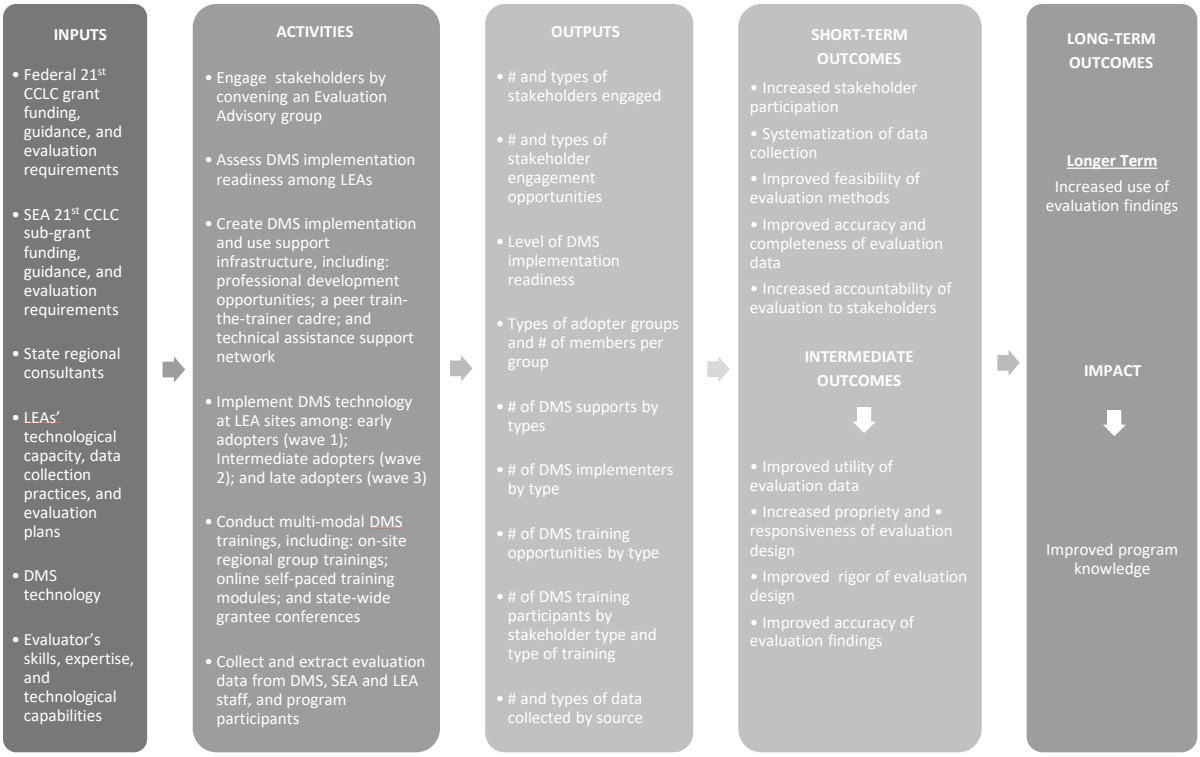
The SEA contracted with a team of investigators at GSU to conduct a multiyear process and outcome evaluation of its 21st Century Community Learning Centers. The evaluation used a mixed-methods, utilization-focused participatory evaluation (UFPE) design that included monitoring and evaluating the implementation of the program. A DMS was created to meet the new reporting requirements established by Title IV, Part B, of NCLB. The specific aims of the DMSE were to examine the fidelity of the DMS implementation and the effectiveness of remediation and extramural programming on academic achievement. The particular objectives of the original DMS study within the broader statewide evaluation were to (1) identify resources needed for successful implementation and operation, (2) determine areas for improvement before full-scale implementation, and (3) assess the impact of the DMS on program operation. In order to

execute the evaluation, GSU contracted with a software vendor to implement an online data collection system and conducted a formative examination of its implementation.

Over the course of the 4-year evaluation of the afterschool program, the state granted 77 sub-awards to community based organizations to implement local afterschool programs in every country across the state. Sub-awardees included LEAs and other community-based agencies selected to implement and expand afterschool programs throughout the state. They provided services and activities specifically designed to help students meet local and state academic standards in subjects such as reading and math. These students attended schools that met the criteria for "needs improvement" as defined by the state. Over the course of the evaluation, the sub-awardees operated afterschool programs in 272 settings and provided services to approximately 39,000 children and their families per year (estimate based on 2005–2006 service population). Among those served by CCLC, 87% were children and 13% were adult family members. Figure 5 (see p. 25 below) articulates the theory of change operating within the context of the DMSE study.

In order to ensure a higher return on the investment public entities make in the evaluation, evaluation studies must provide relevant and useful information for evidence-based decision making regarding the conduct of social interventions. Ensuring accountability of public funding intends to foster good stewardship of public resources, drives performance toward intended outcomes, and benefits targeted populations or settings and the society. This study retrospectively examined how the resources used to implement a data management system functioned within the evaluation of the afterschool program.

Figure 5. Theory of Change for a Utilization-Focused, Participatory Evaluation of an Afterschool Program DMS Technology Implementation



While the results of this study present findings from a single, ungeneralizable case, it highlights insights and lessons about the need to invest in and support technologies that help to bolster evaluation use and evidence-based programming, which will ensure achievement of desired outcomes. Furthermore, improved access and processes to foster use of data and evaluation results to drive decision making with regard to afterschool programming can be more efficiently address by answering critical questions about the effectiveness of afterschool programs. In particular, the study illuminated ways that the DMS technology affected evaluation use.

The examination of how UFPE in education can be made more astute is of particular importance because many social ills are solved through better education of

citizens. While this is a single case taken from the educational field, it may serve as a case example of how to leverage technology to improve capacity, participation, and use for evaluation. It also helped to identify the specific roles and critical factors in UFPE that data and information management technology can enhance and make more robust with systematic implementation.

In the following section—chapter two of the study—I review the literature on current evaluation practice and technology use in educational program evaluation. Areas of particular focus include: utilization-focused, participatory evaluation, information, and data management technologies as a feature of educational program evaluation studies. A detailed discussion of the study's methodology immediately follows, and includes a presentation of the analytical framework and data collection and analytic methods. In chapter four, I present results from the qualitative and quantitative analyses. I conclude with a discussion of key findings, implications for the field, and future research.

CHAPTER 2

REVIEW OF LITERATURE

The following review of the literature discusses the ways that the use of technology has evolved, the associated factors that impact use, and some potential characteristics of technology to facilitate evaluation capacity and participation. It includes contemporary evaluation literature, explores how the educational research and evaluation literature situates technology and aims to understand the role that technology plays in educational programming and evaluation. In examining existing empirical evidence published on technologies used in K-12 and afterschool education programs, I hope to understand how technology contributes to the body of literature focused on evaluating and studying educational programs.

I chose to explore the role of data management technologies and their application in educational programs. This exploration had a particular focus on understanding the role of DMS in helping evaluators and researchers answer questions and solve issues related to the effectiveness of educational programs. To conduct the review, I sought out relevant peer-reviewed and grey literature. In addition, I examined classic, seminal, and evolving literature written by the foremost authorities in the field of education and program evaluation. Specific topics explored in the literature review include two primary topics: (1) key features of utilization-focused participatory evaluations and (2) existing evidence of data management technology as a factor in evaluation use in afterschool and other educational programs. Publications of focus for the review included evaluation journals such as the *American Journal of Evaluation,* the *Journal of Evaluation,* and the journal of *Research in Education, Evaluation and Program Planning, Educational*

Evaluation and Policy Analysis New Directions in Evaluation, American Journal of Community Psychology, and *Review of Educational Research.*

In addition, afterschool evaluation reports and several dissertations, were included in this literature review. Literature that attends to participatory and utilization focused evaluations, data management systems (or DMS), and known facilitators and barriers to program impacts in afterschool programs were also sought for inclusion in this review. In examining manuscripts from this literature, the review emphasized technology's existence within current and popular program evaluation models and frameworks commonly used by practitioners. Of particular interest were those models that focused on the achievement of evaluation use and capacity building as a means to enhance educational outcomes and the learning within educational program contexts as well as to improve evaluation practice.

Utilization-Focused Participatory Evaluation of Educational Programs

Several relevant policies have contributed to the increased need for tools such as data management technologies to facilitate evaluation use and to improve educational interventions such as afterschool programs. Examining these relevant policies can help to uncover the drivers and contextual factors surrounding the emergence of increased UFPE and DMS in afterschool programs. In particular, evaluation has increasingly been a valuable tool to facilitate evidence-based decisions around educational programs (Cousins, Goh, & Clark, 2006; Patton, 1997, 2008). One of the most reliable indicators of evaluation's ever-increasing importance in reshaping and reforming systems, policies, and environments in which public programs operate is the adoption of policies at virtually all levels of government. Federal policies, such as GPRA and PRA, outlined

evaluation's role in producing evidence for decision making about programming and initiatives undertaken by federal, state, and local agencies (U.S. Office of Budget & Management, 2009, 2010). Cousins and Leithwood (1986), for example, examined 65 empirical studies and found that evaluation was a critical part of decision-making about the programs and policies examined in the reported studies. This study distilled some of the uses of evaluation to help make decisions about program interventions, funding, operations, and management.

Throughout the normalization of educational evaluations in public programming necessitated efforts to formalize, standardize, and codify evaluation best practices. Among the predominant challenges was the common criticism of the effectiveness of evaluations in fulfilling their role to produce timely and meaningful results and information to inform social interventions. For example, Chatterji (2005) described how educational studies that often mismatched methods with program contexts, limiting the usefulness of the information that they produced:

> Thoughtful protests from renowned leaders of the American Evaluation Association (AEA) and the American Educational Research Association (AERA) (see St. Pierre, 2002; Berliner, 2002; Erikson & Gutierrez, 2002; Feuer, Towne, & Shavelson, 2002; Pellegrino & Goldman, 2002) are testament to the fact that the notions of "science", as applicable to gathering research-based evidence on school interventions and programs, have been fundamentally mischaracterized in federal documents stemming from the NCLB legislation . . . suggests a continuing need for dialogue and resolution of research design issues among members of the academic community. (Chatterji, 2005, p. 14)

Chatterji advocated for other research designs and best research practice in evaluation theory beyond the ways that federal policy had defined program success in the past.

To address this challenge and identify strategies to improve the utility of program evaluations, evaluation practitioners have increasingly investigated and applied more

reflexive and inclusive approaches to evaluative work, which produces more balanced results. In doing so, methodological misalignments reveal areas of evaluation malpractice where more pragmatic approaches with a better fit for application in natural settings materialized. Positivist inquiries of educational and social programs and policies that emphasize costly experimentation in controlled settings are less commonly applied, and mixed-methods approaches that are more adaptive now dominate the field (Creswell, 2013). Because of this shift, evaluations are now more practical, feasible, and useful.

Defining Evaluation Use

Program evaluation practices continue to focus on increasing the efficiency and accountability of publically funded programs. In particular, use of evaluation is a concept central to the belief that evaluations are to make a difference (Shadish, Cook, & Leviton, 1991; Weiss, 1979). Research inquiries about evaluation use are plentiful, and their findings have revealed multiple evaluation uses beyond policy and program adoption. To better understand evaluation use as a goal, it is essential to explore and define use as it continues to evolve in evaluation practice.

Evaluation use can refer to users' interactions and uses with evaluation tools, products, findings, and processes, including technologies such as data management and collection systems that may affect stakeholder and organization engagement (Alkin & King, 2016; Alkin & Taut, 2003). It may involve the use of evaluation knowledge (effective use). It also includes individual, group, or organizational learning from an evaluation (conceptual use). Evaluation use can also manifest as individual, groups, or organizations affected by an evaluation (symbolic use) (King & Pechman, 1984; Leviton & Hughes, 1981). These multiple ways of viewing evaluation use suggest that the

strategies evaluators employ to achieve use may vary depending on the type of use they are trying to achieve. For instance, evaluation knowledge, learning, and effects can occur not only from users' interactions with products and findings as described above but also through users' involvement in the evaluation process itself. Patton (1997) defined this as *process use,* which researchers credit for its ability to shift or change culture, thinking, attitudes, and behaviors among individuals, groups, and organizations (Cousins, Donohue & Bloom, 1996; Cousins & Lee, 2004; Cousins & Whitmore, 1998; Greene, 1988; Johnson, Onwuegbuzie, & Turner, 2007; Patton, 1997; Preskill & Caracelli, 1994; Shulha & Cousins, 1997). In addition, the influence of evaluation products or processes to inform decisions continues to characterize ongoing studies about evaluation use.

Other areas where evaluations are influential include policy development and implementation, education of stakeholders, and processing of evaluation information. From their work, Cousins and Leithwood (1986) qualified the process use of evaluation as the adoption of evaluation findings and recommendations among program staff, as exhibited by their actions. Their seminal study was a cornerstone of conceptualizing evaluation use as aiding decision makers and promoting continuous improvements. In addition, the study helped to initiate information and knowledge transfer and diffusion uses of evaluation (Ottoson & Hawe, 2009). Other expansions of use include evaluation for political influence (Kirkhart, 2000) and improving social conditions (Henry & Mark, 2003). All of these contributions to the dialogue on evaluation use have helped evaluators to be better equipped to target their activities and products.

Factors That Influence Evaluation Use

Several key factors that strongly influence evaluation use include the perceptions of evaluations' appropriateness and utility among its intended users. At a rudimentary level, elements of evaluation studies such as timeliness in delivering results and the quality of evaluation products are some of the extrinsic factors that contribute to whether or not decision makers consider evaluation results and recommendations. The availability and access of stakeholders to compete for information also influence perceptions of the utility of evaluation products among intended users and stakeholders. Mitchell's (1980) early analysis of the use of empirical evidence in state-level policy making, for example, confirmed the existing linkages to evaluations' usability.

Furthermore, Mictchell's (1981) study confirmed that the role that stakeholders and evaluators play in the evaluation have implications for use. Mitchell's (1981) study also found that leaders' views about the importance of evaluation within their organizations helped to shape how much or little organizational members and other stakeholders bought into and used the evaluation and its results in making policy and program decisions. Additionally, the evaluative experiences and perceptions of organizational leaders were important to their decisions about the allocation of time and other resources for evaluation.

Moreover, the nature of interactions between evaluators and evaluation stakeholders has considerable influence not only on stakeholder's perceptions of the evaluation, but also on evaluation use (Cousins & Earl, 1986; Cousins & Leithwood, 1992; Patton, 2008; Wingens, 1990). In particular, research has shown that these perceptions are rooted in the stakeholders' experiences. Quite often the evaluation,

stakeholders' perceptions are moderated by the evaluation results, outcomes, and products of evaluation. In addition, the interactions, relationships, and level of engagement in evaluative practices and processes among stakeholders influence their perceptions (Mitchell, 1981).

Stakeholder Engagement

Researchers who have looked at the factors related to stakeholders' perceptions and use of evaluation beyond the surface, found that the engagement of clients and other stakeholders is critical for increasing use (Fetterman, Kaftarian, & Wandersman, 2014; Patton, 1997). Essentially, the more exposure to evaluation practices, processes, and other products one has, the more familiar one becomes with how and why to leverage evaluative contributions in one's work. The study of this phenomenon in the field, called participatory evaluation (PE) theory, became popular in the mid-1970s, and continues to be widely studied in evaluation research today. Evaluation engagement, or PE, occurs when the creation, implementation, and dissemination of the evaluation involves the intended users, e.g., those engaged in evaluation processes and targeted by evaluation products (Cousins & Whitmore, 1998). As a result, many evaluation models have developed that focus upon increasing evaluation use by way of deepening, broadening, and intensifying end-users and other evaluation stakeholder's engagement throughout the evaluation lifecycle in meaningful and purposeful ways.

As the evaluation community conducts research to generate models and frameworks geared toward improving results and use of evaluation in public education and other social programs, these models increasingly focus on the necessary knowledge, skills, and attitudes of both the intended users of evaluation and the evaluators (Alkin,

1991; Cousins & Leithwood, 1986, 1992, 1995; Mitchell, 1980; Mitchell, 1981; Shulha & Cousins, 1997; Weiss, 1983). These models also highlight the organizational infrastructure (i.e., fiscal, communication, and human resources) and evaluator competencies and qualifications needed to engage organizations and their members in evaluation. Other contemporary evaluation models are focused on the organizational cultural and readiness for evaluation (i.e., leadership support, learning oriented).

Evaluability assessments are one example of a standard evaluation practice designed to examine organizational readiness to engage in evaluation. Three prominent evaluation models primarily guide collaborative implementation of evaluation processes. Amos and Cousins' (2007) model of the evaluation process used to aid learning around evaluation. Preskill & Boyle's (2008) model focused on the development of evaluative organization culture. Ottoson and Hawe's (2009) model of evaluation sought to understand evaluation use for the identification, diffusion, and translation of valuable program, policy, and other technological innovations across organizations.

The application of participatory models and approaches to evaluation have helped move evaluation cross over from aspirations of scientific legitimacy to practical techniques that improve the timeliness and accessibility of evaluation results and products. The field has privileged UFE and PE designs in recognition of their superior ability to empower intended users, engage stakeholders, and foster use (Patton, 2015). Practitioners have published a wealth of case studies in various fields to this end, e.g., public health, education, non-profit management (Arnold, 2006; Brandon, & Higa, 2004; Compton, Baizerman, & Preskill, 2001; Connolly & York, 2002; King, 2002). These studies have documented the critical components of successfully applied participatory

models that have built the capacity of intended users and stakeholders to use evaluations. For example, Brandon and Singh (2009) conducted an empirical research study on the role of evaluators as facilitators of use. Using observers' opinions and rigorous review of PE studies on the extent of use among decision makers, policy makers, and practitioners, Brandon and Singh (2009) found that evaluation use, process use, and evaluation influence were more prevalent. Another example is that of a non-U.S. governmental effort to build evaluation capacity in Australia (Nacarella et al., 2007). In this study, researchers presented definitional, conceptual, and practical issues in PE capacity building. The case involved over 100 projects and described methods used, challenges experienced, and benefits achieved by their efforts.

The evaluation research literature demonstrates theorists' successes in identifying the designs that encourage and facilitate participation. These models (i.e., PE, utilization-focused evaluations, evaluation capacity building) strategically engage stakeholders and evaluators as collaborative partners working to co-create evaluations that are maximally used, particularly among intended users (Cousins & Earl, 1995; Greene, 1988; Patton 1997; Stockdill, Baizerman & Compton, 2002). Researchers have also documented a variety of ways that evaluation use has been evident in the use of participatory models. One is that PE has resulted in building sustained interactivity between evaluators and practitioners (Huberman, 1990). Another is that it increases stakeholder engagement in decision making around the evaluation activities (Byrk, 1983; Greene, 1988).

Moreover, participatory approaches have been evident in recruiting stakeholders as collaborative partners in the evaluation to foster joint responsibility for the study and accountability for us of the results (Ayers, 1987). Furthermore, participatory models

have been effective in advocating for joint ownership and control of evaluation decisions among the evaluator and intended users (Cousins & Earl, 1992, 1995). Many evaluation scholars credit shifts toward co-creation of evaluation and its products and results with helping intended users and stakeholders feel worthy, empowered, appreciative, and more accepting of the evaluation findings. In order for evaluators to engage intended users and stakeholders effectively, however, Cousins and Leithwood (1986, 1992) claim that the evaluator must establish his or her credibility and be capable of producing information that is relevant for the intended users. How the evaluator executes his or her role, demonstrates competence, and establishes legitimacy often times dictates the extent to which the evaluator plays a prominent role in shaping these perceptions. This in turn influences the development of evaluation skills and literacy in stakeholders, particularly evaluation intended users that are critical to fostering the co-creation and use of evaluation (Cousins & Whitmore, 1988).

PE models born out of stakeholder-based evaluation were also made famous for their ability to usurp and undercut the influence of politics in the development of social interventions (Byrk, 1983; Cousins & Earl 1992; Weiss, 1983). By engaging stakeholders at different levels in the evaluation, it became easier to gain buy-in and improve perceptions of evaluation results. Through increased interaction and participation in the evaluative, stakeholder and intended users, perceptions and understanding of the evaluation are also improved (Byrk, 1983; Weiss, 1983).

Participation of Intended Users

PEs that focus on intense engagement of a small, distinct group of intended users, rather than a broad stakeholder engagement, are often credited for their ability to engage

intended users at every stage of evaluation (Patton, 2008; Stockdill, Baizerman, & Compton, 2002). Doing so fosters positive perceptions of the quality, credibility, and relevance of the evaluation and its findings. Because the intended user has a hand in assisting the direction of the evaluation, the user tends to have more confidence that the information produced will be useful, timely and communicated effectively to other stakeholders, and, thereby, improve the likelihood of use (Cousins & Earl; 1986; Cousins & Leithwood, 1986, 1992; Mitchell, 1981; Patton, 2008; Preskill & Caracelli, 1997; Preskill, Zuckermann, & Matthews, 2003; Wingens, 1990).

Evaluations that focus on engaging the intended users employ what is known as utilization-focused evaluation (UFE) theory. This theory hypothesizes that the more engaged intended users are in the design, implementation, and dissemination of the evaluation and its products, the better the evaluation design and plans will meet the needs of the intended users and other stakeholders. Moreover, the increased engagement, particularly among intended users, provides increased opportunities for the evaluator to learn about and understand the intended users' information needs and best incorporate ways to inform evaluation use in decision-making.

Furthermore, high levels of interaction between the evaluator and intended users improve the evaluator's contextual understanding of the political and organizational climate within which the evaluation is occurring. This increase in the understanding of context allows the evaluator to: reconcile competing for information, personal characteristics, and leadership style of decision makers; gauge receptiveness to change; and apply an evaluation design that accommodates the needs of the intended users. Ultimately, by ensuring a proper fit between the evaluation design and the organization,

critical insights are gained from the intended users who have insider contextual knowledge, and established relationships are reinforced within the broader organization.

Attending to the intended users of evaluation illustrates the field's gravitation towards evaluation models that engage and empower intended users and other stakeholders in evaluation (Cousins & Earl, 1992; Henry & Mark, 2003; Scriven, 1996). The communication and social interactions between evaluators, intended users, and other stakeholders are among some of the key factors that influence evaluation use. The nature and effectiveness of these relationships affect the provision of useful, appropriate, and timely information. Studies demonstrate that the evaluators' role, stakeholders' engagement, and evaluation characteristics are three of several salient characteristics that may facilitate or inhibit evaluation use.

Within the last 40 years, evaluation theory has focused on identifying factors, including related attitudes and behaviors, that influence utilization among evaluation stakeholders and intended users (Byrk, 1983; Cousins & Earl, 1992; Henry & Mark, 2003; Preskill & Caracelli, 1997; Scriven, 2007; Weiss, 1983). Together, the ability to engage stakeholders and focus the evaluation on the needs of the intended users have helped evaluators design and implement evaluations that improve different aspects of use. Indeed, factors such as organizational capacity, infrastructure, or leadership support for evaluation, and the role, competence, and legitimacy of the evaluator affect intended users and stakeholders' abilities to participate in and use evaluation processes, results, and products (Cousins & Earl, 1995; King, 1995).

Participant engagement, after all, is one of the most influential factors of use due to its effects on the perceptions that intended users hold about the credibility, merit, and

validity of the information derived in an evaluation. The credibility, merit, and validity of evaluation also have a strong bearing on the likelihood of use; thus, the perceptions of intended users about the evaluation are of the highest importance. Researchers theorize that improving the understanding of the role of technology as a tool can add to this body of knowledge and the dialogue on evaluation use (Preskill, 2008). While use remains the primary indicator of evaluation worthiness within the public sector, many theorists have increased their investments of time and resources to study the factors affecting evaluation use. Yet, our understanding of the role of technology is still unclear. Technology can serve to enhance the much-needed communication and social interaction between the evaluator and stakeholders and intended users of evaluation. It can allow for the presence of other positively-associated influences of use such as the provision of information needed promptly (Cousins & Earl, 1992). However, the relationship between evaluation and technology remains murky; and evaluators continue to study evaluation practices and ways that they may be improved to meet the needs of evaluation users (Preskill et al., 2003).

Evaluation Capacity Building

PE models have helped to clarify the evaluator's role. The role of evaluators in working with clients can shift and expand throughout the evaluation process. Many evaluators have gone from being independent external researchers to program facilitators, teachers, arbitrators, and sometimes advocates (Alavi & Leidner, 2001; Scriven, 1996; Preskill, 1994). A survey conducted among members of the American Evaluation Association showed that 95% of evaluators identify engaging stakeholders in evaluation as a function of their responsibilities as evaluators (Preskill & Caracelli, 1997). Since PE

theory upholds the notion that effectual impact on decision making and utility accounts for the factors that affect stakeholder engagement, particularly among intended users, it would be beneficial to uncover the ways that recent technological advances have affected the defined role of evaluators, intended users, and other evaluation stakeholders. Now that evaluators widely accept that developing capacity of intended evaluation users and other key stakeholders in evaluation is necessary to achieve use (Yarbrough, Shulha, Hopson, & Caruthers, 2011). It would be exciting and beneficial to know whether technology may play a critical role in being more successful at stakeholder engagement, a key focus of the present study.

In addition to focusing on the roles of evaluators, primary evaluation users, and stakeholders in carrying out the intended uses of an evaluation, many contemporary evaluation models also point to the critical role played by the context (i.e., political will, leadership support) and infrastructure (i.e., communications, technology) surrounding the evaluation. Participatory evaluation models share the view that the role of the evaluator is to enable use, involve intended users in evaluative work, and grow the capacity of individuals, organizations and beyond (i.e., intra- and inter-organizational systems) to engage in evaluation and use of evaluation results (Alkin, 1991; Byrk, 1983; Cousins & Earl, 1986; Weiss, 1983). Furthermore, the ability of an evaluation to achieve optimal levels of engagement is dependent upon the amount of support, infrastructure, and tools available to facilitate the process, which is touched upon in this study (Chouinard & Cousins, 2009).

The organizational context and infrastructure undergirding programs and their evaluation are often inclusive of program staff skills, expertise within the organizations,

tools, and other apparatuses at the program's disposal to support engagement and use of evaluation. Together organizational infrastructure and context often make up the existing capacity of the organization to engage in evaluation. Frequently, it is within the organizational context and infrastructure of the evaluation where technological capabilities and functions lie (Galen & Grodzicki, 2011). More empirical evidence of how technologies function in evaluation practice will inform evaluators' ability to use it effectively to foster evaluation use and engage stakeholders and intended users. Moreover, there will continue to be a general lack of awareness about the ways that emerging technologies shift the roles and responsibilities of evaluators to work collaboratively with the creators and users of these technologies.

The evidence on evaluation use shows that data are increasingly important to highlight and identify best practices, program implementation, processes, outcomes, and impacts. Data provide the building blocks for evaluation and program monitoring, and helps to ensure that programs implement effective strategies. Data such as performance indicators or measures help to describe whether a program and its activities are effective. Evaluations rely on data and the collection, analysis, reporting and dissemination are central to the role and function of all evaluations.

Technology as a Facilitator of Evaluation Use in Educational Programs

> As technology has become ever more embedded in our personal and professional lives, and as it has changed the nature of our work and relationships, it has created many opportunities. . . . [I]f we design and use technology appropriately within the evaluation profession, it has the potential for contributing to what and how people learn from and about evaluation. (Preskill, 2008, p. 132)

Increased policies, such as NCLB, that mandate evaluation and performance measure reporting indicate that federal agencies highly value and support actions to

improve evaluation use and data quality (Commission on Evidence-Based Policymaking, 2016). Thus, the field of evaluation could benefit overall by continuing its pursuit of practice improvements, particularly those created through better technology integration. Efficiencies from technology use in afterschool evaluation include key to improving data collection, analysis, and dissemination efficiencies (Gunderson, 2012). But, what do evaluators know about how technology may improve use, participation, and capacity among intended users?

Technology has direct applications for facilitating the aims of participatory evaluation, or PE, such as UFE and ECB. Recent innovations in technology have substantially improved the ability to use data, information, and knowledge; facilitate collaboration and sharing; and deliver opportunities for professional development and skill building (Alavi & Leidner, 2001; Heritage, Lee, Chen, & LaTorre, 2005; Wayman, 2005; Wayman, Stringfield, & Yakimowski, 2004). Yet it remains under examined as a critical component to UFE and PE approaches in peer reviewed literature on evaluation.

Perhaps, because many PEs were conceived in the 1980s and became more influential during the time when technology adoption greatly accelerated. Today a clear articulation of technology's role in evaluation practice is still underway. For example, in 1999, a volume of *New Directions for Evaluation* focused on the proliferation of information technologies and computer-mediated communication tools among organizational settings, programs, and professional networks in which evaluators work. Most of the published literature focuses on evaluations of the increasing use of evaluators to study and evaluate new technologies, computer-delivered programs, human–computer interactions, and computer-mediated organizational practices and relations. The volume

primarily focused on raising awareness of the implications of technology on emerging evaluation methods such as collection, management, analysis, and representation of data (Gay & Bennington, 1999). However, the elevating of participatory models of evaluation continues to evolve as DMS technologies influence and change the roles of evaluators, intended users, and other evaluation stakeholders. As such, there is now an undeniable impact of technological developments on evaluators' ability to facilitate and initiate UFPE approaches.

As highlighted by the authors of the *New Direction for Evaluation* volume on "Information Technologies in Evaluation," new technologies such as mobile and cloud computing have emerged to enable informed decisions with the goal of increasing access, efficiency, effectiveness, equity, and quality of education. Not only do they provide the necessary mechanisms for collecting and managing needed information and data, but they also foster an environment in which the demand for information drives their use. Since their initial development, some types of technologies have become more comprehensive, integrated, and functional in the production of educational data and information as the cornerstone of information-based decision-making. Moreover, the uses of these technologies have grown beyond enabling the collection, analysis, and presentation of data, to facilitating routine evaluation practice and engagement among individuals and organizations. Chouinard and Cousins (2009) suggested that in order for evaluation to meet the demands of increasingly globalized and diverse organizational environments, evaluation practitioners needed to make use of emerging technological innovations that enable high-impact transfer of evaluation findings.

Alkin (2012), Nord (2011), Taut and Alkin (2003), and Taut and Brauns (2003) have spoken specifically to the challenges that evaluators face because of the limited work done to incorporate guidelines and recommendations around the use of technologies into new and existing evaluation frameworks. For example, when there is no alignment between the technological needs of the local afterschool programs and the evaluator, the implementation process can become cumbersome. Furthermore, the evaluation literature on the use of technology in program evaluation is limited and does not address how technology functions in applied evaluation models. I found in my review of the literature many studies of participatory, utilization-focused, and ECB models. These studies demonstrate the critical roles of leadership, culture, communication, and infrastructure in the production and use of data, information, and learning (Cousins & Lee, 2004). Because there are few peer-reviewed, published studies that examine the role that technology plays in facilitating participation, this study is focused on examining the potential effects of DMS on building evaluation capacity, or improving the use among intended users and stakeholders in educational programs. As a central part of the evaluation infrastructure, technologies such as DMS, help evaluators to gain access to data, information, and knowledge that are more automated, and immediately accessible, and less obstructive (Rosenberg, 2001; Santo, 2005; Mookherji, Mehl, Kaonga, & Mechael, 2015; Preskill, 2008; Taylor-Powell & Boyd, 2008). They are essential to the knowledge-making process and outcomes in that they increase efficiencies such as cost and time, service a wide range of needs among various evaluation stakeholders. In addition, they improve data collection, information gathering, and knowledge management, and foster evaluation use. In order to maximize the benefits of technology

in evaluation practice, the evidence-base on evaluation must be expanded to incorporate technology so that evaluations practitioners can make use of emerging innovations to advance evaluation's aims of increasing its use to solve social problems (Chouinard & Cousins, 2009). More empirical evidence about the application of technology in participatory, utilization-focused, or evaluation capacity-building designs may benefit practitioners because of all of the potential uses that DMS has to facilitate evaluation activities that involve stakeholders, including data entry, data management, data sharing and reporting, and data analysis. Furthermore, the DMS can be used to help understand the program in different ways, make decisions about the program, or to change the program's culture, attitudes, or evaluative knowledge.

Policies and the Emergence of DMS Technology

Technologies such as DMS are consistently changing and improving in response to an ever-changing policy and an environmental context that increasingly calls upon educational systems to collect and examine data and information necessary to inform decision-making. Policies such as the 2001 reauthorization of the Elementary and Secondary Education Act (ESEA) were among the first to establish the national 21st CCLC program. Future reauthorizations of ESEA also called for: (1) monitoring and evaluating programs and activities; (2) providing capacity building, training, and technical assistance; and (3) conducting comprehensive evaluation of program effectiveness and activities across the national, state, and local levels (Elementary and Secondary Education Act of 2001, Part B, §§ 4201-4206). This specific legislation had a significant influence on changing information sharing and reporting needs within education systems around the newly established national afterschool program. This

policy in particular established a need for a centralized and integrated DMS to facilitate these evaluation activities across the various levels of the program. As SEAs implemented US ED's the 21st CCLC program across the county, evaluation practitioners adopted and implemented DMS for evaluative purpose such as reporting of the benefits of the DMS.

However, the peer-reviewed literature on DMS on program implementation and outcomes in afterschool settings are largely limited to grey literature (Alavi & Leidner, 2001; Wayman, 2005; Wayman & Cho, 2008; Wayman & Stringfield, 2006). Kulik's (1994) meta-analysis aggregated the findings of more than 500 studies on computer-based instruction and its effect on student achievement, learning, and attitudes towards classroom instruction. Sivin-Kachala (1998) published a literature review that synthesized findings on the effects of technology on learning and achievement across 219 studies conducted between 1900 to 1997. These studies link instructional technologies to educational outcomes, but they do not speak to the use of technology-based information systems for the management and administration of educational programs.

DMS Adoption by the U.S. Department of Education

Other areas of research on technology systems in education focus on student information systems. To improve the information used to evaluate education programs and to ease states' reporting burden, in 2002 US ED initiated an ambitious, multiyear plan to consolidate elementary and secondary data collections into a single, department-wide system focused on performance. The extensive proliferation of data and information management systems began in 2004 when US ED requested and was authorized by OMB to implement its Performance-Based Data Management Initiative (PBDMI) to comply

with public comments under PRA. This system primarily served to collect “Civil Rights Data” on an annual basis from a sample of districts and schools to measure education trends and evaluate data associated with ensuring that the laws and regulations providing all students with equal access to education were met. Information collection through the PBDMI intended to reduce the paperwork burden on those educators providing relevant information (U.S. Department of Education, 2005).

A 2005 audit of the implementation of US ED’s PBDMI system found that the initiative was successful in consolidating and defining much of the data into a unified system. Uniformity was achieved through the development of universally recognized data definitions that reduced data redundancies and errors. Furthermore, the process of implementation involved extensive outreach, training, professional development, and technical assistance to build SEAs’ capacities to adopt the PBDMI. Outreach to states involved regional conferences, monitoring, and technical assistance site visits, and grants to most states to offset their costs. SEAs surveyed through the study indicated overall satisfaction with the department’s outreach but acknowledged the need to continue to address constraints around capacity. Furthermore, 50% of those surveyed indicated the goal of decreasing data collection as the most important outcome of the system implementation. The five-year implementation of the full system helped to eliminate and consolidate ad hoc data collections that were burdening schools.

Other comprehensive DMS designed and implemented to manage student information are often a data source used to evaluate educational outcomes of selected federally-funded education programs in elementary and secondary education at the student, school, district, state, and federal levels. Managers and analysts also use data in

the evaluation of federal programs to ascertain the status and progress of the education programs for which they are responsible. These data are also accessible to the public as well as to the broader education community in a manner compliant with privacy laws and regulations. The data provided include information about schools, districts, and states through US ED's EDFacts initiative. The goal was to improve access to performance data relevant to policy-making, management, and budget decisions for all K–12 educational programs.

DMS Adoption among State and Local Education Agencies

SEAs have also implemented data and information management systems that align with the various systems at the federal level, mostly to comply with federal requirements under GPRA and ITMRA. Schools are also taking recommendations from experts who support that increasing the capacity of school systems can largely be facilitated through technology, such as DMS (Wayman, Stringfield & Yakimowski, 2004). In order to comply with these federal laws, most school systems adopted DMS that encompasses all data requested and received about public education, including student demographic and academic performance and personnel, financial, and organizational information. These systems often enable rapid electronic transfers of student records and transcripts to other districts, institutions of higher education, and federal agencies. Data collected through DMS are also frequently used internally by schools and school systems to report on compliance with educational accountability standards.

School education/school information systems also serve to: facilitate and document student discipline; plan curriculum and lesson structures; develop educational

learning plans; manage registration and admissions; and provide teachers, parents, and pupils access to all this information over the Internet (Heritage, Lee, Chen, & LaTorre, 2005; Wayman & Stringfield, 2006). In recent years, DMS have moved away from being viewed as a school administration tool and developed into comprehensive and integrated DMS for managing school business processes and whole school improvement.

As a result, many states have taken steps to provide guidelines for how to use educational technology more effectively, and 80% have developed standards for teachers and administrators that include technology (Education Week, 2003). Both SEAs and LEAs have adopted variations of DMS to: allow public access to reports and data about educational outcomes; extend virtual campus and classroom instruction for students; facilitate sharing of data between schools, LEAs, and SEAs for federal regulatory assess and compliance; and to make longitudinal educational data regarding the educational system publically available. In the following section, several state and local school systems' experiences with DMS are examined to identify changes in use and design over time and to glean lessons on how these DMS have changed the way schools and school systems do business.

DMS Adoption in Afterschool Programs

Increased use of various technologies in evaluation, due in part to federal accountability policies (i.e., GPRA, PRA), usually require electronic reporting of performance and evaluation data (Commission on Evidence-Based Policymaking, 2016; Executive Office of the President Council of Economic Advisers, 2014; U.S. Congress, 1993). Decision makers such as Congress, federal agencies, grantees, and partners impose and attach these data requirements to public funding as a means to hold awardees

of funds accountable. A multitude of technologies have become prominent features in supporting evaluation, performance measurement, and technical assistance to programs. Technologies such as data management, storage, sharing, and organization systems are becoming increasingly essential to the facilitation of more effective and efficient engagement and use of program evaluation (refer to Figure 6 for National DMS Implementation Objectives). Use of DMS data is particularly prevalent among program evaluators who share program successes with stakeholders in a way that demonstrates the impact and value of afterschool programs in the community.

The intense need for data about afterschool programs to either justify funding, demonstrate outcomes, or show impact, has resulted in the proliferation of DMS for the administration, management, quality improvement efforts, monitoring, and evaluation of 21st CCLC afterschool programs. With the expansion of federal funding for afterschool, programs came the advent of DMS that computerize and automate data collection, management, and dissemination. These systems give educational evaluators unprecedented access to an increasing amount of information about educational policies and programs.

Figure 6. Objectives of DMS Implementation at the National Level

1. To obtain information that will allow US ED to monitor how the program is operating under state administration
2. To provide US ED staff with the capacity to respond to congressional, OMB, and other departmental inquiries about the program
3. To provide state 21st CCLC staff with a series of system-supported reports and related features that enable them to use data to assess the performance of grantees in their state and to inform related monitoring, evaluation, and technical assistance efforts
4. To support federal efforts to obtain a complete, up-to-date picture of the 21st CCLC grantees and the characteristics of their programs

5. To reduce data-entry redundancy by prepopulating certain sections of the Annual Performance Report (APR) module of PPICS. This will make the APR process a more streamlined and less intense process for 21st CCLC grantees
6. To allow state users of the system to allow better assess how an individual program has changed over time as modifications are made to respond to center attendees' needs

The availability of DMS technologies has been particularly impactful and transformative in afterschool programs. It has centralized access to afterschool program evaluations across the nation, made them available to help build upon the evidence base, and promoted evidence-based practices in afterschool programming (Little et al., 2007). For close to two decades, DMS technologies, such as the Profile and Performance Information Collection System, have collected annual data on afterschool programs across the nation. In so doing, they have been able to provide vital data that have helped to expand learning opportunities and the sharing of cross-cutting best practices to inform and improve afterschool programs (American Institutes for Research, 2012; McElvain, 2013; Naftzger et al., 2011). Specifically, PPICS users have expanded upon the DMS to collect and analyze a wider variety of data on afterschool programs. One example of this is the work of PPICS users to extend the DMS to accommodate the collection and examination of teachers' reports on: homework completion, class participation, attendance, classroom behaviors, English and math classroom grades, and reading and math achievement scores.

With the addition of these data, educational researchers have since uncovered that improvements in these areas are directly tied to higher program attendance among afterschool participants (American Institutes for Research, 2012; Naftzger et al., 2011). Concretely, the development and implementation of these information and data

management technologies in afterschool programming at the federal and state levels have revolutionized how scientific knowledge is created, shared, and used. The inferences made about the benefits of afterschool programs are enhanced by DMS in many ways. Organizations such as the Afterschool Alliance have highlighted the presence of a DMS in non-federally funded afterschool programs as an indicator of quality implementation and a milestone in the development of statewide infrastructures and state afterschool networks (Afterschool Alliance, 2013; Afterschool Alliance, 2016; Griffin & Martinez, 2013).

Evaluation of afterschool programs have often served as laboratories, or models, of best practice, helped define quality, provided professional development, and focused on academic outcomes. As a result, many kinds of afterschool programs have been compelled to be more intentional in their design and approach. There are few such studies examining the influence of ongoing performance monitoring and evaluation, primarily facilitated by DMS, on program processes or outcomes. Because program stakeholders, practitioners, and the afterschool community at large now have better access to information about afterschool program processes and outcomes, more studies that examine the DMS relationship with program and evaluation capabilities are possible. A review of literature indicates that the availability of such studies may enhance the abilities of practitioners in education and other fields to be better equipped to share, network, and transport information and data. Contemporary evaluations and research on afterschool programs only offer anecdotal accounts of the ways DMS technologies are essential for facilitating more effective and efficient uses of data for continuous program improvement in afterschool programs (Granger, 2010). For example, a case study of a

teacher's use of the Khan Academy online video library found that the use of online tutorials among students and teachers improved educational practices such as: completion of interactive practice exercises, rapid assessment and feedback, self-paced tracking of progress to complete educational learning components, and parental engagement (Curry & Jackson-Smarr, 2012; Wise & Schwartzbeck, 2013).

In sum, the current literature on contemporary evaluation practices and the ways that technology affects them lacks adequate examination and understanding of how technology influences evaluation use, partition among key stakeholders and intended users, and contributes to evaluation capacity. Through this examination of a DMS in a UFPE evaluation of a statewide afterschool program, insights about the relationship between evaluation and program outcomes and technology use in evaluation practice can be illuminated and potentially leveraged by evaluators to further their aims on behalf of the stakeholders and programs with which they work.

CHAPTER 3

METHODOLOGY

Schwandt (2015) defines methodology as "…a theory of how inquiry should proceed… involving analysis of the assumptions, principles, and procedures in a particular approach to inquiry" (p. 200). This chapter presents the methodology that framed this study and the analytic procedural methods I used to address my research questions. It also outlines the underlying justifications for selecting them. This study highlights some of the ways that the use of the DMS in program evaluations may enhance evaluation participation, capacity, and use among intended users. I designed this analytic process to address the overarching research questions.

- What role did the implementation of a DMS technology play in the UFPE of afterschool programs?
- What are the relationships between the DMS and evaluation use, participation, and capacity building?
- What factors influenced the DMS and evaluation use, participation, and capacity building?

For this research, I employed a reflexive pragmatic theoretical framework to explore the phenomena of DMS in program evaluation (Subedi, 2016). The use of secondary data allowed for an efficient and unobtrusive access to relevant data while imposing minimal effect on the program, its settings, and its participants (Berg & Lune, 2012; Bernard, 2011; Gibson, 2018; Griffin, 2012; Lee, 2000; Roth, Gray, Shockley, & Weng, 2015). The current study involved the use of secondary program evaluation surveys and archival documents from the original evaluation study. The present study

used an exploratory sequential mixed-methods design (Creswell, 2008; Ivankova, Creswell and Stick, 2006; Johnson & Onwuegbuzie, 2004; Onwuegbuzie & Collins, 2007, 2014). The intent in sequencing the analyses was first to determine the levels of engagement, capacity, and use of evaluation data and processes as measured through quantitative analyses of the DMS User Surveys, and provide an interpretation of the survey results as told through archival documents from the original evaluation study (Mitchell, 2015). An analytical sequential mixed-methods analysis aimed to glean understanding about the interactions and intersections between the DMS and UFPE outcomes of the afterschool evaluation.

Methodological Framework

Educational research methodological approaches to address a particular research question are typically dictated by the knowledge claims of the researcher, or what the researcher claims to be true. Among educational researchers, there are three broad types of knowledge claims satisfied through empirical investigation: constructivist qualitative research, positivist quantitative research, and practical mixed methods research (Denzin & Lincoln, 2008, Tashakkori & Teddlie, 2003). Positivists believe that quantitative methods help to confirm and validate information, elevating it to knowledge that is fixed and universal. Constructivists, on the other hand, believe that experiences create knowledge that is understood relative to the context (e.g., time, space) in which it is being experienced, and is therefore not universal or fixed. Pragmatists take on tenets of both positivist and constructivist philosophies by claiming that knowledge generations are understood universally and within specific circumstances using both qualitative and quantitative research methods (Johnson & Onwuegbuzie, 2004; Quine, 1951).

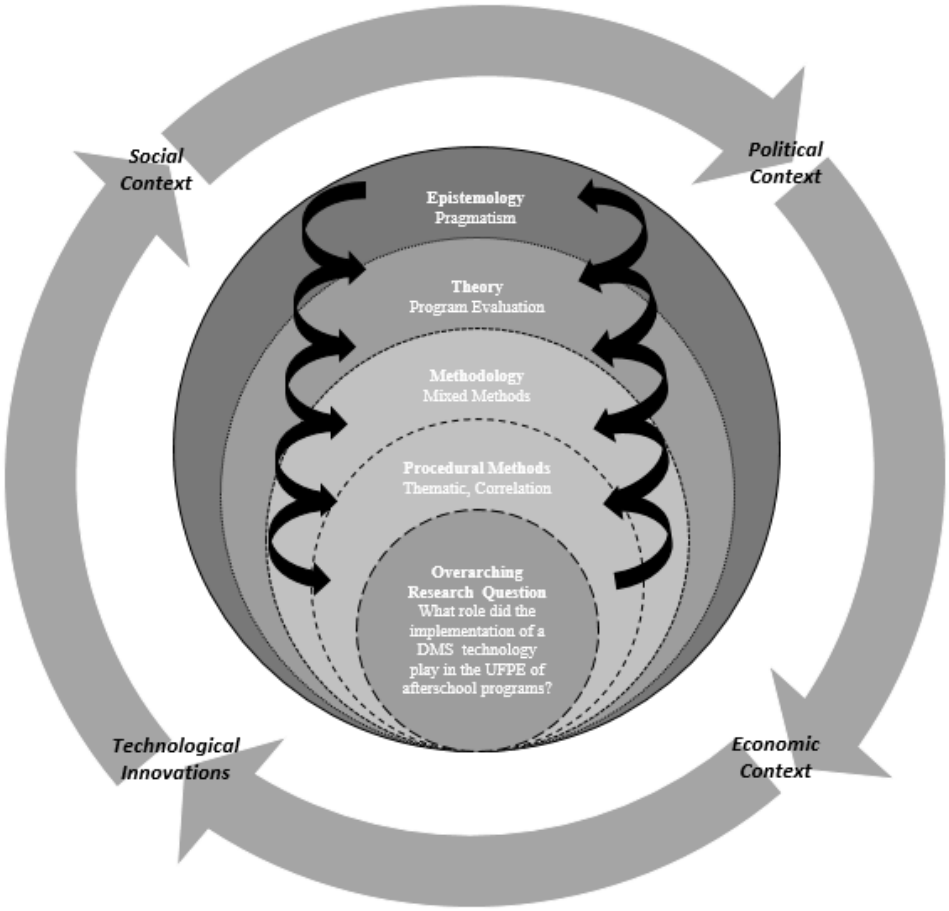
Pragmatism asserts that learning through experience influences decision making and approaches to problem solving within particular contexts.

The conceptual framework for this study incorporated epistemological, theoretical, and analytical paradigms and components that guided the mixed-methods analysis of archival participatory afterschool evaluation data. The framework (refer to figure 7 on p. 57) is adapted from the pivotal works on mixed methods by Onwuegbuzie and Collins (2013). In their writings on mixed methods, Onwuegbuzie and Collins (2013) often combine both naturalistic and pragmatic research approaches. In carrying out this study, I used a mixed-methods design. The following section describes the interconnections and interdependencies between the components of the conceptual framework. It also includes the theoretical operating paradigm and methodological concepts relevant to mixed-methods designs and their application to the research questions.

Pragmatism

This research considered two questions for the selection of applicable methods: (1) What methods will produce the most valid and reliable results and (2) Which approach can provide the most information to answer the research questions. Pragmatism was selected as the theoretical framework to undergird this study for its natural alignment with the notion of government accountability and program evaluation (Green 2007; Obwuegbuzie & Leech, 2006), and its foundational premises that undergird and justify mixed methods research.

Figure 7. Using Pragmatic Mixed Methods to Understand DMS Technologies in Participatory Program Evaluations



Definition.

Pragmatism is a philosophical dogmatism that focuses on identifying practical solutions to social problems (Johnson & Onwuegbuzie, 2004). Specifically, pragmatists seek to find moderate and commonsense ways of solving problems in the natural or physical world. In the naturalistic context of issues and potential solutions, culture and institutional structures, as well as subjectivity, play a relevant role in how issues and applicable solutions manifest.

Focus on the Lived Experience.

Pragmatism prioritizes human experiences in the lived works as the fabric of constructed knowledge and evidence. In pragmatism, problems and their solutions occur in the natural or physical world. In the naturalistic context, culture, institutional structures, and subjective individual experiences are all relevant to the ways that issues manifest and the selection of tested solutions. Contrary to traditional dualisms like rationalism versus empiricism or subjectivism versus objectivism, pragmatism seeks to find moderate and commonsense ways of solving problems.

Knowledge Claims.

Within pragmatism, lived experience dictate the validity of claims, where asserted justifications rely on the context of current beliefs. Therefore, knowledge claims are not perfect or absolute, but instead specific and tied to the contexts in which they occur. Instead, conclusions are drawn by gathering “sufficiently numerous and intimately connected" pieces of supporting evidence (Menand, 1997, pp. 5–6). Predictability and workability of various potential solutions to issues with a multitude of possible conclusions determine the applicability of theories presented about a particular phenomenon. Each option may in fact be useful in helping to gain an understanding of naturally occurring phenomena. In pragmatism, however, knowledge is constructed or reduced from a culmination of immediate experiences (Quine, 1951).

In pragmatism, truth or reality regarding optimal outcomes where both subjective and objective points of view, as well as quantitative and qualitative methods, are valued and acknowledged for their role in interpreting empirical findings. The research process is fluid, incorporating both deductive and inductive logic. It is also inclusive of theory

and observations about sociopolitical contexts in order to construct different kinds of understandings of phenomena that are more informed and complete than single method studies (Johnson, Obwuegbuzie, & Turner, 2007).

As a framework, pragmatism aligns with the nature of program evaluation in that both are rooted in publicly funded policies, programs, or initiatives. As a philosophy, pragmatism supports the unification of normative and empirical analysis for the development of a "value oriented" epistemology (Ball, 1995; Carnap, 2002; Dewey, 1938; Greene & Caracelli, 1997; Quine, 1951). Pragmatism is also commonly associated with mixed-methods designs because of its reflexivity in allowing for an integrated approach to data collection and analysis and presentation of findings (Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 2009).

One tenet of pragmatism supports the application of the most appropriate methods of empirical testing that can adequately answer the research questions or attend to the purpose for which the research is conducted. This tenet of pragmatism aligns with a mixed methodology that accommodates the use of mixed data, analyses, and representation methods that are both quantitative and qualitative (Greene, Caracelli, & Graham, 1989; Johnson et al., 2007; Onwuegbuzie & Teddlie, 2003). Because pragmatists support the efficient use of both qualitative and quantitative methods to maximize our understanding of educational and social phenomena (Johnson et al., 2007; Miles & Huberman, 1994), they support the position that the selection of research methods should be guided by and responsive to the research question(s).

Furthermore, this study attended to the tenets of pragmatism to find efficient solutions to practical problems by examining existing data that are available through

unobtrusive data collection. Specifically, this study uses unobtrusive archival data that are artifacts or archival records from the initial evaluation study of a statewide afterschool program and its implementation of a DMS technology to facilitate the outcome evaluation. These data include participant observation field notes; notes from informal interviews; transcripts of formal taped interviews; surveys; and unobtrusive data such as evaluation reports, program descriptions, and other program records, including training and technical assistance, implementation schedules, advisory committee meeting minutes (refer to Appendix A, GA 21st CCLC Statewide Evaluation Data Archive Contents).

Evaluation Theory

Evaluation theory is the body of knowledge, a set of rules, or generalized statements that describe how evaluation should be done and explain evaluation activities (Alkin, 2004; King, 2015). Evaluation theory is used to organize, categorize, describe, predict, explain, and understand evaluation practices (Shadish et al., 1991). Evaluation theories present approaches or models to guide evaluation practice, its intended uses, and valuation by stakeholders using a plurality of methods (Alkin, 2004; Greene, 2005; Scriven, 1996). Thus, the theory of evaluation is represented in its practice (Fullan, 2001). As evaluation continues to evolve, its focus is increasingly to understand the needs of stakeholders to improve accountability and the use of evaluation in decision making about policies and programs (Cousins, Goh, & Clark, 2006; Patton, 1997, 2008). According to Alkin (2004), it is social accountability, social inquiry, and epistemology that shapes evaluation use, methods, practices, and values.

Social Accountability and Use.

The institutionalization of evaluation in the public discourse is demonstrated in policy changes that have required federally funded programs to undergo evaluations of grant funding in part to ensure the stewardship of public funds and institutionalization made evaluation more of a routine organizational operation (Greene, 2007; Preskill & Russ-Eft, 2005; Weiss, 1983). Now, government agencies, like the Office of Management and Budget (OMB), have the authority to expand the implementation of government-wide efforts around evaluation. One example of such a program is the OMB Evaluation Initiative, which supports Federal agencies' capacities to evaluate their programs (American Planning Association, 2012; U.S. Agency for International Development, 2012). This initiative aims to assist agencies in building capacity to apply evaluations to answer questions for decision makers about the worth, merit, and return on investment in social interventions.

Critique of evaluations conducted on a variety of programs and interventions focus on the lack of effectiveness, an inability to produce useful results, and costs (King, 2015). Increasingly, costly social interventions (i.e., Social Security, Medicare, Medicaid, Head Start) are scrutinized for draining limited public resources (Patton, 1997; Rossi, Lipsey, & Freeman, 1999). As a result, stakeholders question the value and returns on investments made in programs relative to costs. In order to assess their worth, performance monitoring and evaluation has increased to hold the government accountable for associated spending on program evaluation and the usefulness of evaluative work.

Social Inquiry and Methods.

More frequently, organizations call upon evaluation to equip them with capabilities to conduct and use evaluation processes, results, and products in decision-making. With these developments, there is more need for robust evaluation practices that are reflexive and responsive to the needs of stakeholders and are focused on their participation and capacity to use evaluation processes and outcomes (Preskill & Russ-Eft, 2005). In essence, evaluation is more results and performance-oriented and less positivist, technical, and hierarchical.

Criticisms of social programming, and evaluation in particular, stemmed from scientific methodologies inappropriately applied in social contexts where experimental control was difficult to achieve. The positivist inquiries of educational and social programs and policies introduced scientific methods that emphasized experimentation in controlled settings, which proved ineffective in many social contexts. The positivist orientation of evaluation centers on the objective-outsider and the use of experimental and quasi-experimental designs to determine causes and effects. Challenges naturally arose from a lack of adequate fit of experimental methods in non-controlled contexts (Patton, 2008). For instance, randomized control trials sometimes use the incorrect unit of analysis and presents unusable findings. Many unsuccessful evaluations lacked adequate capacity and resources to support the high costs of large-scale primary data collection and perform complex experimental and quasi-experimental analyses. In many cases, these types of evaluation studies were unable to obtain a large enough sample size or control groups for comparison purpose (Yin, 2014).

Epistemology and Valuing.

A lack of effectiveness in evaluation helped to reveal that approaches that are more pragmatic provided a better fit for application in natural settings. In order to address such criticism of evaluation, practitioners began to employ more instinctively reflexive approaches to evaluative work. Attention shifted away from identifying causes and effects toward understanding the various truths, realities, and interdependencies of context, time, and social phenomena. With these developments, the field of evaluation saw a marked need for the creation of more robust practices that changed the orientation of evaluation from the objective-outsider to participant-researcher. The new orientation of evaluation is more reflexive and responsive to the needs of stakeholders and is focused on participation and capacity to use evaluation processes and outcomes (Preskill & Russ-Eft, 2005; Shadish et al., 1991). With a focus on evaluation stakeholders, the capacity to conduct and sustain evaluations that produce reliable and valid findings also became essential to evaluation practice.

Mixed Methods

Mixed methods are both a methodology and a method, applicable to the collection, analysis, questions, data, and presentations involved in empirical inquiries (Creswell & Plano Clark, 2007; Teddlie & Tashakkori, 2009). Mixed methods may produce more compelling results by converging evidence and distinct contributions from different sources, methods, or approaches in a single study. Johnson and Onwuegbuzie (2004) define mixed-methods research as "the class of research where the researcher mixes or combinations of quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study" (p. 17). Deployment of mixed

methods to re-examine existing data through a new or different lens can lead to a fresh perspective or understanding of a phenomenon and how it has evolved over time (Johnson et al., 2007).

Approaches.

Creswell and Plano Clark (2007) determined two main classifications that most mixed-methods design approaches fall into, including typology-based and dynamic approaches (Ivankova, Creswell, & Stick, 2006). The more popular of the two are the typology-based approaches, which focus on the usefulness of the selection and adaptation of mixed methods to the specific discipline, purpose (i.e., evaluation, education, social services, nursing, etc.), and research questions. Dynamic approaches focus more on the iterative processes of conceptualizing the steps of conducting the research in a way that recognizes the interconnections between the various study components (Creswell & Plano Clark, 2011; Greene, 2007; Greene & Caracelli, 1997).

The current study uses the typological approach while incorporating some dynamic elements, and focuses on both the purpose and processes to determine the mixing of the methods (Hall & Howard, 2008). The typological aspects use a hybrid of two typologies, one rooted in education, and the other based on evaluation, to address the specific purpose and research questions, with evaluation typologies being dominant.

Representation.

The purpose of this study was to examine the role of technology in utilization-focused participatory evaluation practice. In using multiple methods and sources of data, I aimed to triangulate findings with the primary study by blending, synthesizing, and re-presenting the results (Creswell, 2008; Creswell, Plano Clark, Greene, 1988, 2007; Green

& Caracelli, 1997; Gutman, & Hanson, 2003; Patton, 2008; Tashakkori & Teddlie, 2003; Teddlie & Tashakkori, 2009). Re-presentations of the data include both qualitization, or rich narrative descriptions, and quantization, or numeric tables, figures, and graphs (Johnson, Onwuegbuzie, & Turner, 2007).

The dynamic aspect of the study is that it addressed the linkages between the mixed analyses and the relationship between the researcher and the study design. Through using a mixed-method design, this study UFPE can be re-conceptualized to be more inclusive of DMS technologies. While there has been great emphasis on the use of randomized field trials for generating scientific evidence on the effectiveness of educational programs undertaken (Rossi, Freeman, & Lipsey, 1999; Shadish, Cook, & Campbell, 2002), increasingly education researchers and evaluators use mixed-method designs as a viable alternative because they emphasize consideration of temporal factors in examining programs. An advantage of mixed-methods approaches is that they consider organizational or community contexts and other relevant site-specific variables with multiple research methods. In addition, mixed-methods approaches that examine programs/policy initiatives within particular contexts allow the results to produce a fuller deeper understanding of how the program is developed and implemented within specific organizational or community settings. Reasonable questions to ask about a particular program at a particular time, and methods best applied to answer them are predicated on the developmental stage of the program as it operates. For these reasons, a mixed-methods design aligns with the aims of the study and question posed in this research.

Such in-depth study of contextual variables along with a systematic examination of program inputs and processes as potential moderators and intervening factors are

necessary and prerequisite to both designing and implementing sound field experiments (Chatterji, 2005). According to Chatterji, "Very tightly conceived but de-contextualized experiments following in the research traditions of laboratory experimentation are weak research designs for studying educational programs in field settings" (p. 15). In the same vein, prematurely implemented experimental designs do not lead to improved understandings of "what works," but instead to an a-theoretical, poorly conceptualized "black box" where little about the reasons for the conditions under which a program worked or failed are understood. This approach leaves very little ability to maintain external validity or replicability (Rossi et al., 1999). Thus, in-depth analysis of archived administrative records and primary data (i.e., interviews, observations, surveys), and quantitized, or qualitative data converted into digital forms, allows for further exploration via statistical analyses conducted in the quantitative component of this study.

Mixed-methods research is also appropriate for use with richer datasets. The diverse types of data that they involve can help to tell a complete story of the DMS technology implementation and the ways it helped foster evaluation participation, use, and increased capacity among its intended users. Using mixed methods and data analysis, this study builds on and synthesizes the findings across phases of the original study. Triangulating the results from the analyses across different phases of the original research portrays a more comprehensive picture of how the DMS technology functions as an agent of change in the PE design (Greene, 2007).

The information produced by this mixed-methods approach is more comprehensive than information produced using a mono-method research (Campbell & Stanley, 1963; Greene, 2006; Onwuegbuzie & Collins, 2013). The narrative and

descriptive statistics help to improve contextual understanding of the DMS technology's implementation in a complex multi-site evaluation of statewide afterschool programs. By enhancing the understanding of the DMS context with correlation data that illustrate the strength and direction of the relationships between related themes, users of this work may make stronger connections in understanding its applicability for their purpose. Moreover, by using qualitatively driven mixed methods, an understanding of quantitative data is furthered.

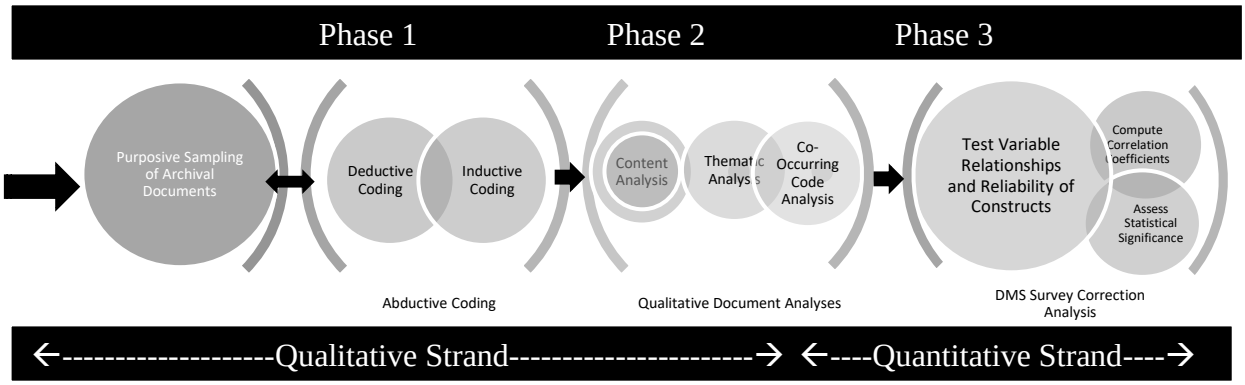
Design

Mixed-methods designs can be fixed or emergent (Creswell & Plano Clark, 2011). Fixed designs plan for the use of both quantitative and qualitative methods from the start of the research process, whereas the use of mixed methods in emergent designs arises due to issues that develop during the research process. This study involved three analyses: constant comparison, content analysis, and correlation. To conduct each analysis, I employed a sequential exploratory mixed-analysis approach mixed re-presentation at each phase (Tashakkori & Teddlie, 1998).

The exploratory nature of this research allowed the qualitative texts to be quantized through the process of data reduction to describe and explore the relationships within and between themes and codes (Johnson & Onwuegbuzie, 2004), making the specific approach of this study sequential. Tashakkori and Teddlie (1998) described quantization as the transformation of coded qualitative data intro a quantitative form, whereas qualitization is the conversion of quantitative numerical data intro qualitative themes. Moreover, a qualitatively driven mixed-methods approach helped in the development of a model about the role of technology in UFPE that was then tested using

quantitative methods (Creswell, Shope, Plano Clark, & Green, 2006; Mason, 2006). Use of an exploratory design intended to initiate a new framework for understanding evaluation use in UFPEs that engage DMS technologies (refer to figure 8). This fully mixed study instead engaged documents as primary data collected using a mix of qualitative (i.e., interviews. observations) and quantitative (i.e., surveys with fixed items) data. I used mixed data analysis and representation (i.e., quantization, qualitization) throughout the study, beginning with the sampling of documents included in the study.

Figure 8. Fully Mixed Sequential (Equal Status Qual-Quan) Design



Data Sources

The study incorporated an analysis of the existing dataset about the statewide afterschool program gathered through program evaluations conducted to assess the effectiveness of remediation and extramural programming on academic achievement. The original study involved observation, interview, and survey data associated with the DMS Implementation. In addition, administrative records pertaining to the DMS implementation, training, technical assistance and support, and use in the afterschool program served as sources of data for this study. The study investigators who preserved

these data provided me access to extract relevant program records, reports, data collection protocols, instruments, and raw survey data from the archive for this study.

Document Archive

The examination of artifacts to evaluate information systems is common in information systems design-science research (Prat, Comyn, & Akoka, 2013). In these studies, information system artifacts are used to assess key information features, including achievement of intended purpose, optimal implementation environments, operation, essential implementation activities, and evolution of the technology overtime. The study of archives is a form of secondary data analysis and are limited by potential inaccuracies and biases in power, representativeness, and relevance (Gray, Shockley, & Weng, 2015). Data scientists use similar methods to solve problems with information and data structures (Hevner, March, Park, & Park, 2004). In design-science research, artifacts are used for evaluating information systems. Artifacts can include system concepts, models, methods, requirements, records, byproducts. In design-science research, the purpose of the evaluating information system artifacts is to produce and test a theory about its design (Gregor & Hevner, 2013; Gregor & Jones, 2007; Walls, Widmeyer, & El Savvy, 1992). Although the study of artifacts intends to produce information to inform the design of an information system, I argue that the examination of materials documenting an information system's implementation may be equally beneficial for understanding how information systems operate within the context for their intended use.

Georgia State University's Institutional Review Board (IRB) approved a protocol developed for this study. The original study investigator(s) were contacted to help me gain access to the electronic project archive, which were stored on a secure network. The

principal investigators of the original study approved the IRB protocol for this study and facilitated access to the archival project data. The study protocol submitted to the IRB identified the target population of evaluations for this study and outlined the study procedures, risks, and benefits associated with the analysis of archival data, which was minimal. This study did not involve data collection or contact with human subject research, so the IRB application did not contain requirements for participation, study withdrawal, or parameters of program confidentiality. Instead, the protocol summarized the elements contained in the dataset as well as procedures for data analysis and maintenance of data security.

After receiving IRB approval for the study protocol and access to the archive, I generated a census of the total number of files in the archive using open-source statistical computing and data mining software called *R* for Windows, Version 3.2.0. Consistent published studies in educational research that use large datasets, data mining techniques are developed and used in order to obtain relevant data and to find hidden relationships between phenomena and the context which they occur (Aher & Lobo, 2011; Han & Kamber, 2006). Data mining techniques that are used in educational research include classification, clustering, outlier detection, and association. (Aher & Lobo, 2011). The program first imported a compressed copy of the archive to a secure password-protected location on the University network to allow for manipulation and examination of the dataset. For this analysis, I used a copied version of the archive in order to preserve the original archive.

Sampling Procedures

For this study, I used a purposeful sampling to select documents for analysis from the volume of documents in the project archive. Documents were selected based upon the file format and relevance of content to the study questions. To conduct sampling from the archive I worked with a programmer to create an index of the archive's contents using Linux BASH commands and *R* statistical software. Once the documents were indexed, a criterion sample of the most relevant texts in the data archive was identified using a search of key terms first using a program created in *R* and again in Atlas.ti, versions 5 and 6. The criteria used for sampling focused on the relevance of the data to the constructs or themes of interest in the research questions (i.e., evaluation; data collection, management and reporting; data management system or software; vendor; implementation; training and technical assistance).

To create an index of the archive contents the programmer and I ran Linux BASH syntax to create a .CSV file containing a directory of the archive contents. The directory file contained the file path, name, extension, size, and sum number of total documents. In total, the archive contained more than 24,500 files (refer to Table 1). Next, to reduce the amount of data, the programmer and I developed a program in *R* to identify and remove duplicate files (refer to Table 1). Once we removed duplicate files, we selected file types appropriate for qualitative text analysis for inclusion in the document sample. These included PowerPoint, PDF, Word, and Notepad files (refer to Appendix A for a full list of unduplicated files by type and extension and refer to Appendix B for the Linux BASH and *R* syntax used)..

Table 1. Number and Percentage of Unique and Duplicate Archive Files

File Groups	Number of Files	Percentage of Files
Unique files	7,955	32%
Duplicate files	16,718	68%
Total files	24,673	100%

To further narrow the sample, identified documents containing text relevant to this inquiry by keyword search by creating another program in *R* to search, identify, and retain all files including the following key terms, or variations thereof: *Attendance*, *Registration, DMS software name,*[1] *DMS software vendor name, Data*, and *Evaluation source*. Documents that did not at least one search term were removed.

I imported the remaining set of documents into Atlas.ti and performed another round of key word search manually to further reduce the data. I removed documents from the Atlas.ti hermeneutic unit used for coding that did not contain following search terms three or more of them were removed: evaluation, evaluator, data management, data entry, training, professional development, consultation, technical assistance, computer, scanner, wand, advisory committee, regional consultants, DMS mentor, DMS users, super users, implementation phase, site visits, and observations. After completing the final key word search, a total of 194 documents remained in the hermeneutic unit for coding. Tables 2 and 3 outline the types of files retained from the archive for analysis.

Table 2. Number and Percentage of Archive Documents by Type

Types	Number	Percentage
Ad hoc reports	76	39%
Annual reports	10	5%

[1] In order to not promote a particular software vendor, the data management system software and vendor names are concealed throughout.

Types	Number	Percentage
Implementation plans	66	34%
Primary evaluation data	29	15%
Operating guidelines policies and procedures	13	7%
Total documents by author	194	100%

Table 3. Number of Archive Documents by Authors/Primary Source

	Documents	
Authors/Primary Sources	Number	Percentage
Evaluator	95	49%
Evaluation advisors	19	10%
DMS vendor	29	15%
State education agency	15	8%
Federal education agency	7	4%
Local education agencies	0	0%
Total Docs by type	194	100%

DMS User Surveys

For this study, I also used extant DMS User Survey data from the primary evaluation study to explore relationships between variables represented within the predominant qualitative themes or factors related to the DMS implementation in the UFPE evaluation and to assess the reliability of the variables associated with each factor. The DMS User Survey was implemented as part of the original evaluation study, which included both formative and process studies of the DMS implementation. The survey specifically assessed DMS user experiences and self-efficacy with respect to skills and abilities to operate the DMS. The instrument used multiple choice and open-ended response options, and included a total of 27 total items, of which 14 with met the factor loading cut-off for inclusion for factor interpretation, and those that did not meet the cut-off were dropped from the analysis (Hatcher, 1994). A batch of 115 responses collected

from DMS users were available from the archive for analysis; however, the number of potential survey responses was unavailable and thus a response rate could not be calculated (refer to Appendix D). DMS users included afterschool program staff, such as data entry, administrative, and instructional staff, program coordinators, and directors, and local program evaluators.

Methods

I used mixed procedural methods of analysis and representation of qualitative data. The qualitative phase of analysis preceded two subsequent quantitative phases. The third and final phase involved correlation analysis of DMS User Survey data. Two of the three phases of the document analysis included a combination of content and thematic analyses. Each phase of the analysis was given equal weight and consideration in helping to construct meaning and address the research questions.

Document Analyses

Bowen (2009) defined document analysis as "a systematic procedure for reviewing or evaluating documents . . ." (p. 27). It is a qualitative method for examining and interpreting print or electronic texts or images for the purpose of creating meaning, understanding, and empirical knowledge from records created without a researcher's intervention (Bowen, 2009; Corbin & Strauss, 2008). Sources of data used in document analysis are broadly diverse and vary by type and source. For my study, I conducted document analysis in two phases.

In the first phase if the study, a purposeful sample of documents draft from the archive underwent abductive coding phase. For the first step in the abductive coding phase, I performed a deductive coding using a priori codes derived and adapted from

existing validated instruments, including the Evaluation Capacity Building Checklist, Participatory Evaluation Checklist, and Utilization-Focused Evaluation Checklist (Volkov & King, 2007; Patton, 2013; Work Group for Community Health & Development, 2018) (refer to Appendix C). A brief operational description of each participatory evaluation model as it applies to this study is outlined below.

Participatory Evaluation - Fosters for active involvement of those with a stake in the program. Its Key Features include:

- A focus on the information needs of the program stakeholders and continuous program improvement
- Flexible evaluation design
- Generation of evaluative thinking
- Collaboration between evaluation experts and program stakeholders
- Evaluator as a facilitator of the evaluation process

Utilization - Focuses evaluation on the utility and actual use of the evaluation process/results/products. Its Key Features include:

- The application of evaluation findings
- Focus on intended use by intended users
- Evaluation design selection is based on intended uses
- Active engagement and ownership among primary intended evaluation users
- Evaluator as a teacher/trainer of evaluation use

Evaluation Capacity Building - Involves the design and implementation of teaching and learning strategies to help individuals, groups, and organizations, learn effective and useful evaluation practice. Key Features of ECB include:

- Training, technical assistance, written guidance, communities of practice, and the use of technology and other tools
- Application of strategies to transfer individual learning into increased capacity within organization systems and structures

I also performed inductive coding in which I added new codes that emerged when new patterns or themes emerged when reviewing to the document contents. I coded all documents until I reached a point of saturation. Once all data were coded, I examined the frequencies of coded segments for each code to further reduce the data and identify patterns within and between codes. Through the first phase encompassing this two-part

abductive coding approach, I computed and examined frequencies of coded text within and across each code. I wrote analytic memos to summarize and describe characteristics of the code structure, noting those codes with the highest frequencies. In cases where codes contained sparse coded segments or overlapping themes, codes were merged and revised in an iterative fashion. I repeated this process until no further data reduction or simplification was possible or useful.

The second phase involved co-occurring code analysis. To transform the text data for crossover analyses, I performed quantitative analyses of coded document segments using Atlas.ti to produce descriptive statistics including counts, means, and standard deviations, and to produce correlations between codes, or co-occurring code correlation coefficients (Onwuegbuzie & Combs, 2010). As a means to further reduce and organize the data, I reviewed and created memos describing and discussing the relationship between those documents segments with strong (> .60) to moderate (.59–.49) relationships, as indicated by the associated co-occurring code coefficient.

Coding. The documents were imported into Atlas.ti for coding. I reviewed the coded data and original texts to check the accuracy and consistency of coding to compensate for my limited ability to perform inter-coder reliability as the sole coder of these data. Review of documents, including program, evaluation and DMS schedules, guidance, and operating procedures, reporting guidelines, interview transcripts, and reports involved the use of a standard set of codes and procedures for coding (Bernard, 2011; Patton, 2002). The evaluation study followed best practices and recommendations for analysis and presentation of information (Fetterman et al., 2014). A summary of the

number of coded segments produced by the types of documents analyzed is outlined in Tables 4 and 5.

Table 4. Number of Coded Quotes by Document Author/Primary Source

	Quoted Document Segments	
Author/Primary Source	Number	Percentage
Evaluator (GSU)	1,487	76%
Evaluation advisors (EAC)	171	9%
DMS vendor	202	10%
State education agency (SEA)	77	4%
Federal education agency (US ED)	16	1%
Local education agencies (LEA)	—	—
Number of all quotes	1971	100%

Table 5. Number of Coded Quotes by Document Type

	Quoted Document Segments	
Document Types	Number	Percentage
Ad hoc reports	969	50%
Annual reports	381	19%
Implementation plans/Schedules	422	22%
Enrollment and consent Agreements	9	0%
Evaluation data	18	1%
Guidance materials/SOPs	172	9%
Number of all quotes	1,971	100%

The qualitative document analysis attempted to make sense of or interpret how technology was used to facilitate evaluation capacity building, participation, and use in 21st CCLC programs (Denzin & Lincoln, 2008). The thematic coding and content analysis of archived texts, documents, and other artifacts (i.e., interview transcripts, observation logs, and surveys) relied on analytic induction, a qualitative data-mining technique used to categorically identify phenomena and important relationships among emergent and defining indicators or themes that may be used to construct a hypothesis

(LeCompte & Preissle, 1993; Teddlie & Tashakkori, 2009). Coding entailed highlighting significant ideas and predominant themes that help to answer the research questions previously outlined. I used Atlas.ti software to perform coding of all archival documents.

To analyze these data, I used abductive coding to extract text segments that were related to or representative of the a priori themes associated with the Utilization Focused Evaluation (Patton, 2002), PE (Work Group for Community Health & Development, 2012), and Evaluation Capacity Building (Volkov & King, 2007) checklists. Codes represented constructs of participation as defined by the PE theory. The codes that I used for the document analysis were adapted from the ECB checklist, and codes around utilization were those defined in the UFE checklist for evaluators.

Simultaneously, I conducted deductive coding in order to define emergent themes about the DMS from the document samples from the evaluation study archive. Deductive codes around the DMS were framed within the context of the evaluation study documents, including previous evaluation instruments related to the DMS evaluation (i.e., DMS training surveys, observations, interview transcripts, DMS vendor), evaluation advisory committee (EAC), and site visit reports. To construct the deductive codes, I reviewed and open-coded the documents simultaneously. Periodically, I reviewed the grounded codes to refine and group the codes and identify overarching themes (Backett & Davison, 1995; Jain & Ogden, 1999; Miles & Huberman, 1994; Pope, Ziebland, & Mays, 2000). Once I reached a point of saturation and no new codes emerged, I finalized the codebook (refer to Appendix C).

Memoing.

As I coded the dates, I also created memos that documented and tracked developing concepts emerging from the data and to note the ways that concepts and codes fit together (Glaser & Strauss, 1967). Memoing helped to identify emergent relationships and categories in the a priori codes. Through a grounded interactive approach, I refined and expanded my codebook to reflect developing codes and patterns that emerged throughout my examination of the texts (Blair, 2015; Glaser & Strauss, 1967).

Theme identification.

The thematic analysis sought to identify patterns and themes within the documents that could help to describe further the nature of the relationship between the DMS and PE (Berg, & Lune, 2012; Blaire, 2015; Boyatzis, 1998). Themes refer to the concepts that explain how ideas or categories are connected. In my research, I identified the ways that technology related to the evaluation, its uses, participation by intended users and stakeholders, and institutionalization within routine program activities. I also used memoing as a technique for preserving credibility, confirmability, and dependability in the coding analysis process (Lincoln & Guba, 1985; White & Marsh, 2006).
Using the research questions as a guide, I extracted recurring themes from the archived documents about the activities that were undertaken to implement the data management. Various stakeholders in the original evaluation study contributed texts to the archive; thus, the secondary data that I analyzed represented the most critical events, activities, and results of the evaluation preserved by critical evaluation participants.

Overall, I organized the themes from the document analysis around the research questions and evaluation outcomes central to this study and the ECB, UFE, and PE

indicators. Relevant DMS themes existing within those overarching constructs were described in Chapter 4 Results. In addition, from my analysis, I identified new constructs emergent from the examination of DMS-only codes.

Co-occurring codes correlations.

Analysis of qualitative data using co-occurrence of codes show the frequency by which different codes in the dataset co-occur across all of the documents coded during the first phase of the analysis. The results are presented in three formats: (1) a matrix of cross-tabulations for each pair of codes; (2) correlation matrices for code pairs, and (3) a network of code pair relationships (i.e., does the coded text appear within or overlap with text assigned another code).

The matrices of cross-tabulations provide counts for each time a pair of codes or themes occur together across all documents coded in the hermeneutic unit. The co-occurring code matrix is similar to a correlation matrix that displays the Pearson *r* correlation coefficients, except a c-coefficient is reported instead that represents the strength of the relationship for pairs of analyzed codes or themes. Similar to a correlation co-efficient, the c-coefficient represents the linear degree of association in terms of the direction and strength of the relationship between a pair of codes or themes. The range of coefficients go from 0 to 1, where a score of 0 indicates no relationship and 1 indicates a perfect positive relationship.

Procedures to calculate the c-coefficient are adapted from author co-citation citation analysis in the field of information science (Leydesdirff & Vaughan, 2006). It is computed by dividing the total count of co-occurrences between code 1 and code 2 by the sum of the count of coded segments for code 1 and the count of coded segments for code

2 and then subtracting the total count of co-occurrences between code 1 and code 2. Lewis (2016) articulated the c-coefficient equation as,

$$C := C_n / (C_1 + C_2) - C_n$$

Table 6 illustrates the full range of score interpretations. I calculated correlations using Atlas.ti software for all cases (n=194 documents) and themes (n= 88 codes) for text coded (n=1971), which is the minimum number of cases to achieve a reliable correlation score (Onwuegbuzie & Johnson, 2006).

Table 6. Co-Occurring Code Co-Efficient (*c*) Strength Scale

Correlation	Strength of the Linear Relationship
1	Perfect
0.80 to 0.99	Very strong
0.60 to 0.79	Strong
0.40 to 0.59	Moderate
0.20 to 0.39	Weak
0.01 to 0.19	Extremely weak
0	None

Analyses of Survey Data

The analytic techniques used to assess secondary DMS User Survey data included Pearson *r* correlation coefficients that allowed for the examination of the relationship between the four constructs that represent nuanced relationship between the DMS and UFPE: (i) user capacity (DMS-ECB), (ii) DMS user participation (DMS-PE), (iii) DMS use (DMS-UFE), and (iv) DMS evaluation (or perceived usefulness of the DMS). Since the original evaluation established content validity and face validity of survey data using member checking with local evaluators to ensure the accuracy, credibility, validity, and transferability among DMS User Survey items, this study assessed internal consistency of the items within the four constructs using Cronbach's alpha reliability coefficient.

Cronbach's alpha represent how closely each set of items are related and indicates of how well they represent the overall construct.

Research Approach

Throughout my career, I have participated in the conduct of dozens of evaluation projects and each project involved a DMS technology for the collection, management, and dissemination of data. These DMS were key to exchanging, capturing, and housing program data to meet accountability requirements and to assess program processes, outcomes, and performance as a means to facilitate continuous program improvements. In my experiences, I saw firsthand the linkages between the importance of effective data management systems and the utility of the evaluation. Thus, my past professional experiences have influenced how I have thought about how to leverage technologies in evaluation to improve evaluation participation, capacity, and use.

Positionality

Several roles and characteristics central to who I am relate to this study and influence how I understand the documents analyzed in this study. First, my role as part of the evaluation team that conducted the original study played a significant role in how I relate to the data in the document analysis. It also afforded me easy access to the data used in this study and helped to formulate the questions at the heart of the investigation. As part of the evaluation team that conducted the study, I worked intimately with the authors/sources of the texts, and in some cases, I contributed as an author to the development of the documents. My role on the project team has given me additional depth of understanding the context and intentions surrounding the development/creation of the documents used in the analysis; however, because of my participatory role in the

construction of the documents, I cannot claim objectivity in the study results, the analysis, or the data analyzed.

My role as an evaluator, in the broader sense, also strongly influenced my interest in taking on this study. In past and current evaluation projects, I found/find myself working with data management systems in different capacities; however, on all the projects the data management system was/is central in facilitating the studies and in some studies the data management system functioned/s better or worse in comparison to others. This variation in the performance of the data management system and their varied influences on the outcomes of the evaluations serve as the impetus for my research.

Ethical Considerations

Because of my role on the original research team, it was necessary for me to make explicit the ways that my experience color my interpretations of the data throughout the analyses. My motives in conducting this research were driven by the transformative role I witnessed as the DMS technology and its implementation vastly improved the capacity of the state Department of Education to conduct rigorous and systematic evaluation of its program across the state. My experiences conducting the initial needs assessment to ascertain a baseline of existing data collection and evaluation capacity among grantees in the state created a benchmark of where the program was and where it needed to get to in order to meet new reporting and funding requirements at the federal level. In addition, I closely monitored and oversaw the vendor's implementation and coordination of the DMS within the state. I witnessed up close and in person the customer service orientation, effectiveness, and abilities of the vendor as well as the needs, barriers, and challenges among the estate program and its grantees to effectively implement and use

the system. Furthermore, I experienced the historical, social, and political contexts that surrounded the original research, DMS, and operation of the state program. These experiences have given me some insider insights about the data that affected my interpretation of results and findings to answer the proposed research questions in the current work.

Posture

Power is both revealed and limited in my data by the mere nature and source of where the texts derived. The majority of documents that relate to the data management system are sources by the funder, software vendor, and evaluators rather than the grantees; however, the texts also provide representation of a sub-group of early adopter grantees who co-constructed them in conjunction with other evaluation stakeholders. The texts illustrate that the early adopter grantees experiences and perceptions of the DMS, the process of its implementation, and ultimately the way that it affected the program and related outcomes. Moreover, the early adopters' role in the piloting of the DMS implementation reflects their input into that process.

I am complicit with the systems of power as a member of the evaluation team tasked with monitoring and evaluating the implementation of the DMS. The evaluation team held a great deal of power in this process as the entity that held the primary contract to procure the software. This position of power was critical for ensuring that adequate oversight and accessibility to the software systems and vendor were in place to carry out the formative evaluation of the implementation of the data management system. The primary funder, the state education agency or SEA, also held a considerable amount of power as exhibited by the texts I analyzed. They provided directives and set priorities for

the entire program, including grantee activities, the DMS software vendor, and the evaluation and evaluation team. The documents illustrate that much of the SEA directives were set in order to help grantees comply with federal funding requirements around performance measure and evaluation reporting.

Grantees also held power in that the DMS implementation relied upon their cooperation to participate in the required changes in programmatic and evaluation reporting, data collection, and performance monitoring. In addition, the grantees' perceptions and levels of satisfaction were critically important to the performance of the state funder, evaluator, and software vendor, in implementing of the program, evaluation, and DMS.

This dissertation study involved the analysis of archived documents and text, and not participants; however, the documents and texts I analyzed were co-created by members of the evaluation team, funders, partners, and grantees. In co-creating these texts. In most cases, we worked collaboratively to negotiate a shared understanding and an agreement on how to represent that shared understanding of the evaluation and program evaluated in the text that I analyzed for the current study. Thus, I conclude that the co-creators of the text perceived me as knowledgeable of the context surrounding the data and able to offer a credible interpretation of the date as it relates the questions of the study.

Credibility and Trustworthiness

Several delimiters defined this study's boundaries qualitatively derived from its context. The most prominent delimiter is that my study involved inductive analysis with a sole interpreter of the data. The data and conclusions represented in this study reflect only

my personal perceptions, which I drew from my experiences as a member of the original team of evaluation researchers who collected the primary data used in this analysis. Thus, it introduces personal bias. I therefore explicitly stated procedures used, to help ensure trustworthiness and appropriate and legitimate representations of the data.

In order to ensure that the results of this study provide consistent and useable data, results of the analyses across the various phases were mixed, integrated, and triangulated to advance assurance and trustworthiness of the findings. I specifically selected to use a mix of data and methods to strengthen the results by layering the findings across different data sources and analyses. In addition, the appendices provide detailed descriptions and specific examples of the data in the archive so that readers may examine the data sources firsthand and make their own judgments about the trustworthiness of the accounts in the study. My extensive and prolonged engagement in conducting the re-examination of the study records bought persistent and multi-faceted observation and reflection of the technology use in a PE over time. Yet, the lapse in time since my experience on the original evaluation study required me to focus stringently on deriving meaning from the archival data that I analyzed rather than my memory. Member checking of the analysis and interpretation of results were performed by incorporating the feedback of the principal investigator and co-principal investigator from the original study, who serve as members of this dissertation study committee.

The quality of the data as evidence determines the analytical strength of any study. Because this study used an unobtrusive approach involving the use of secondary data, I was limited in my ability to address data quality issues with the quality through any procedural controls that are normally used in studies that rely on primary data

sources. Again, the trustworthiness of this research largely also lies in the use of mixed data and methods of analysis, which allowed me to triangulate the finding across the three phases of my study. This dissertation research situated the phenomenon of increasing technology prevalence in program evaluation practice within existing UFPE frameworks to lend additional credibility to this work.

Because this study relied on a purposeful sample, only internal generalizations specific to the time and context of the data may be made about the findings. Similarly, all interpretations of the data are also limited to the perceptions of the reader of this manuscript. While this study used a case example from an afterschool program and lacks dependability and confirmability, the results may have transferability to a vast number of educational programs focused on exploring ways to improve evaluation outcomes through PE.

Limitations

The quality of the data as evidence determines the analytical strength of any study. One limitation of this study is that it does not address the fiscal/budgetary resources or level of funding required for the DMS implementation, as these data were not preserved in the archive. As a participant in the original study, I am aware of the scrutiny of the expenses with the implementation of this survey at the state level. At the time of the original study, there was much scrutiny on the use of the funds to implement the system, and the SEA had to provide and maintain very thorough documentation about the rationale, need, and justification for the use of funds to implement and support the system. Unfortunately, the state maintained the majority of documentation around the

budget and use of funds, and they were not a part of the evaluation team's data archive on the original study.

In addition, the texts analyzed for the current study are not inclusive of much of the primary data collected from the grantees or youth participants enrolled in the program. One reason is due to the loss of primary data housed in online survey software system during the original study that is no longer accessible. These data were lost when the study ended and the software license ceased and was not renewed. Furthermore, much of the primary data collected from the program participants were not relevant or germane to the study on the implementation of the data management system, and therefore were excluded from the document analysis.

All interpretations of the data are limited to the perceptions of the reader of this manuscript. In order to ensure that the results of this study provide consistent and useable results, results of the analyses across the various phases were mixed, integrated, and triangulated to advance assurance and trustworthiness of the findings. By layering the results across data sources and methods of analyses, the understanding of the data and the results of the analysis are strengthened. In addition, the appendices provide detailed descriptions and specific examples of the data in the archive so that the reader may examine the data sources firsthand and make his or her own judgments about the trustworthiness of the accounts in the study.

CHAPTER 4

RESULTS

This chapter presents the findings from the three phases of the fully mixes sequential analyses. It presents the findings to respond to each of the study's questions:

What role did the implementation of a DMS technology play in the UFPE of afterschool programs?

What are the relationships between the DMS and evaluation use, participation, and capacity building?

What factors influenced the DMS and evaluation use, participation, and capacity building?

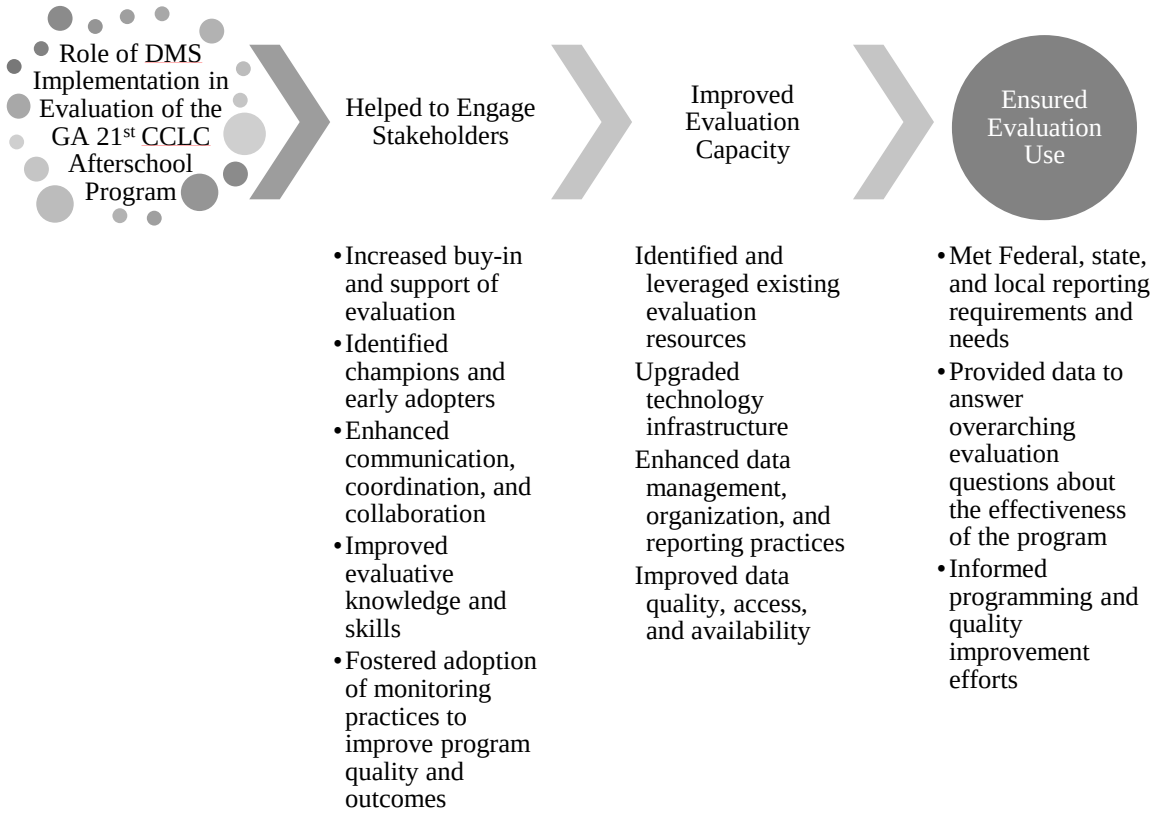
The findings incorporate the results from the qualitative analysis of 194 program records and the examination of the intensity of relationships among co-occurring qualitative codes. In addition, the results of an analysis of DMS survey data, including significant item correlations and internal reliability testing of UFE, PE, ECB, and or DMS survey constructs, are included.

The Roles of DMS Technology in an Afterschool Program Evaluation

Overall, the document analyses indicated that the implementation of DMS was a process in which organizations created opportunities to ensure evaluation use, improve evaluation capacity, and engage evaluation stakeholders (Murphy, 1999; O'Dell, Grayson, & Essaides, 1998). Ultimately, these results show the ways in which DMS

technology can inform and improve evaluation practices as well as yield better evaluation use. Figure 9 summarizes these findings, which are further discussed below.

Figure 9. Summary of DMS Role in Evaluation of the GA 21st CCLC Program

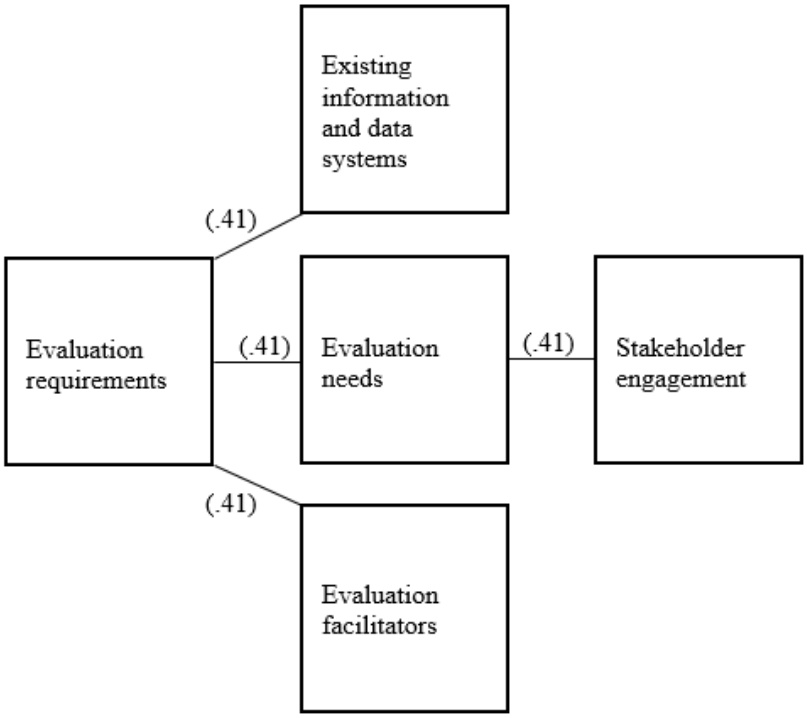


DMS as a Means to Engage Stakeholders

The analysis of the archived documents indicates that the implementation of the DMS necessitated a high level of engagement, communication, coordination, and collaboration among the software vendor, funder, and local grantees around the evaluation. Furthermore, the examination of the relationships among co-occurring codes revealed that federal, state, and local evaluation requirements that helped to engage intended users in the evaluation process moderately related to: evaluation requirements

around local programs' existing information and data systems (r = .41), evaluation needs (r = .41), and other evaluation facilitators (r = .41). Finally, co-occurring code analysis revealed that stakeholder engagement was moderately related to evaluation needs (r = .41). (See Figure 10 and Appendix E for a summary of strong and moderate co-occurring codes.)

Figure 10. UFPE Factors Related Evaluation Participation among Stakeholders



As such, these stakeholders also became engaged in the evaluation by using the DMS to collect, manage, and report data. In addition, the archive contained evaluation reports from local 21st CCLC programs that indicated that stakeholders used their data from the DMS to conduct local evaluations and monitor program performance through which they could inform programming. The DMS provided local-level sub-grantee reports, instructions, and diagnostic reports that allowed for easy compliance with the

Title IV, Part B, 21st CCLC Annual Performance Reporting Requirements. These guidance documents specified the local grantees' responsibilities and timeframes for reporting, summarized the changes in the federal reporting requirements, and highlighted ways to ascertain the quality of the data.

Stakeholder engagement was important to ensuring that the DMS was both implemented and effective in facilitating performance measurement and evaluation of the program. According the DMS User Survey, administrative tasks (i.e., record keeping), data management, communications, and documentation were the most common activities conducted for work in the afterschool programs among the majority (85%) of DMS User Survey respondents. These results indicate a high level of coordination across multiple levels of the program. Moreover, by the end of the third year of the evaluation study, there were more than 300 DMS users interfacing with the system to manage data for close to 37,000 participants across 257 sites operated by 67 grantee organizations across the state. Furthermore, the analysis showed that key stakeholders engaged in the evaluation in multiple ways. These included: DMS trainings, the EAC, peer calls, one-on-one technical assistance, site visits, and large group meetings (e.g., state kickoff meetings).

> The EAC worked with [the SEA] and GSU to set a timeline to complete required tasks for implementing the DMS. (*Phase II DMS Monitoring Summary Report*)

Build Stakeholder Buy-In and Support of Evaluation.

In order to build buy-in and support for the adoption and implementation of the DMS, opportunities for stakeholders to engage in evaluation activities were greatly enhanced. Analysis of the archived documents showed that a wide variety of stakeholders, including the SEA, the DMS vendor, local program directors, and local

evaluators, were engaged in informing the DMS, evaluation design, data collection, interpretation, and reporting of findings, and delivery of training and technical assistance to help with the use of the DMS at the state and local levels.

To garner buy-in and support among stakeholders for the implementation of the DMS, the DMS vendor and SEAs presented information about the benefits of the system and provided demonstrations to grantees and other stakeholders. Information was shared during the state's annual grantee meeting, during the national SEA 21st CCLC conference, and through e-mail and a GA 21st CCLC Program listserv.

Identify Champions and Early Adopters.

To raise buy-in and support to aid in the promotion of the evaluation and DMS at the local level, and to test and vet protocols, products, and implementation, champions and early DMS adopters were identified to form an Evaluation Advisory Committee (EAC). During the first phase of the DMS implementation, 12 grantees self-selected to implement the DMS. In the middle of the first year of the DMS study, another 18 grantees volunteered to pilot the system installation. The group was comprised of stakeholders from the state and local levels, including SEA (i.e., regional consultants, evaluators, DMS vendor) and local afterschool program staff (i.e., afterschool data managers, site coordinators, local program evaluators, project directors). The EAC served to inform the evaluation team about the feasibility and impact of the evaluation on local program activities, including the DMS. The EAC contributed provided consultation, expertise, and recommendations about the evaluation and monitoring, professional development, and quality improvement efforts involved with the DMS. They assisted with coordinating the DMS at the state and local levels and helped to identify and

advocate for training and technical assistance services for local programs. The EAC also contributed to the design and implementation of evaluation and DMS quality efforts.

Data indicate that the contributions of the EAC played in a critical role in the development, administration, and use of the DMS, and therefore contributed substantially to the program evaluation (*Phase III EAC Evaluation Plan Presentation; Phase II EAC Kick-Off Meeting Presentation, DMS User Survey Results*). The EAC monitored the effectiveness of the DMS-related professional development activities and facilitated the implementation of a train-the-trainer DMS Peer Trainer model. This model served to build a cadre of DMS support staff, mentors, and trainings throughout the state. Such recommendations were frequently implemented and had beneficial impacts for DMS users and LEA grantees. In addition, the EAC helped to facilitate the adoption of the DMS by providing the perspective of various stakeholder groups. In so doing, it helped to shape plans about the implementation of the evaluation and the DMS so that these components were feasible and appropriate for the various partners involved. They also helped to garner buy-in and support from these groups by advocating on behalf of their needs and priorities. The EAC helped to ensure that the evaluation had adequate capacity to comply with federal and state reporting requirements.

The EAC also helped to monitor the activities of the DMS vendor. In doing so, the EAC created transparency around the work performed and expended the resources available to support the evaluation. It also helped to highlight the specific needs that stakeholders felt had to be addressed in order to achieve the aims of the evaluation study and the DMS implementation. The EAC was also a primary user of the results and products of the statewide evaluation based upon an ongoing flow of evaluation data and

results between the state evaluators and EAC members. The EAC ultimately functioned as an important feedback loop for the evaluation, sharing findings and facilitating the adoption of appropriate operational program.

Enhance Communication, Coordination, and Collaboration.

Ongoing communication and dissemination, like the establishment of the EAC, were central activities in promoting the buy-in, adoption, and implementation of DMS and thereby the evaluation. As evidenced by the types of documents analyzed (meeting notes, presentations, protocols, and ad hoc reports), much of the program communication and dissemination activities focused on promoting the implementation of the DMS and reinforced program performance and evaluation requirements. These communications also outlined the roles of stakeholders in each of these processes and shared information about key activities targeted for stakeholders to engage in.

Evaluation results shared with stakeholders included the results of both the state and local programs, which aimed to promote evaluation activities and help decision-makers with programming decisions. Not only did communication about the DMS create opportunities to share information and promote engagement in the evaluation and DMS, but it also offered avenues to identify challenges and address barriers through corrective actions taken throughout the various phases of the study. For example, state funder and local afterschool programs received evaluation reports on an ongoing basis to inform them of a variety of program related topics (i.e., missing demographics report, APR summary report, program-level monitoring report, etc.). This process fostered increased understanding of how to use and leverage the DMS technology to comply with complex

reporting requirements, identify issues and challenges, and support program decisions based on data.

The evaluation itself facilitated engagement among DMS users in the evaluation by way of data collection, evaluation design, and implementation, interpretation of results, and development and dissemination of evaluation products. For example, protocols reviewed for the document analysis reflected the various activities to engage participants in the DMS implementation and evaluation study as a means to gather feedback from key stakeholders about their experiences. According to the protocols reviewed (i.e., *Phase II DMS Training Survey*), this feedback was then used by the SEA and LEAs to improve programmatic and evaluation activities by building increased capacity, and increase the use of the DMS technology.

The document analysis also showed that in order to coordinate activities, engaged stakeholders exhibited a high level of collaboration. Specifically, documents in the archive illustrated that the state evaluation plan for the program was vetted by the program's EAC, comprised of a limited number of local afterschool program evaluators and project directors whose programs were funded under the state's afterschool program. The EAC also engaged other stakeholders, including the SEA and the DMS vendor. The state evaluation team, DMS vendor, and funder collaborated with the EAC in the following areas.

1. Purpose, objectives aims of the evaluation
2. Program goals and outcomes that would be assessed and examined
3. Data sources and methods that would be used
4. Timeline and plans to implement the evaluation

5. Products and deliverables of the evaluation to be completed

Improve Evaluative Knowledge and Skills.

Analysis of evaluation reporting also showed that engagement in the DMS implementation and the evaluation of the program resulted in improved knowledge and implementation. Training attendees reported (through surveys) improved attitudes, knowledge, and skills about data collection and record keeping practices, the DMS, and its use and functionality after attending the training. In-person DMS trainings also benefitted attendees in that they provided opportunities for intended users to build a network of contacts to whom they could reach out for support. A majority of online trainees (76%) demonstrated proficiency with DMS functional and procedural knowledge when tested through quizzes administered at the completion of on-demand online training modules.

Adopt Performance Monitoring Practices to Improve Quality.

In addition to developing new tools and resources and delivering training and technical assistance, process monitoring was conducted to ensure the completion of the DMS across LEAs and the state. Quarterly reports from the DMS vendor showed that the DMS required a significant amount of monitoring of substantial human, time, and monetary resources. As a result, close monitoring of how these resources were used was extremely important to the successful implementation of the DMS as well as to ensure that there was buy-in and support for the DMS in the state afterschool program, particularly at the local levels. Furthermore, monitoring through quarterly reports from the DMS contractor and routine meetings with the EAC helped to identify critical barriers to implementation, including grantee challenges with data security, data entry, reporting

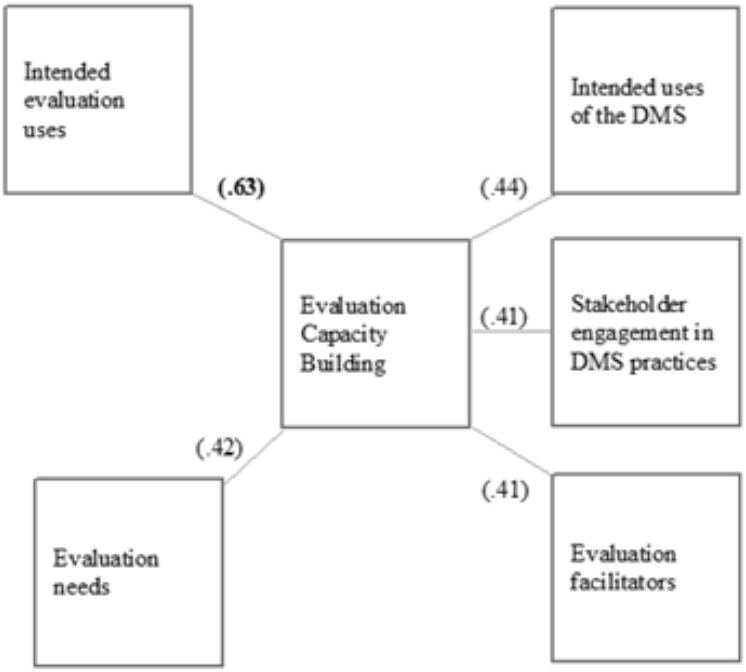
requirements, technical issues, and system installation. Through monitoring and consultation with the EAC, feasible and effective solutions to identified challenges could be identified and acted upon. Correction action plans and DMS implementation progress reports preserved in the archive documented the adoption of evaluation and EAC recommendations over the course of the original evaluation study. The excerpt below, taken from a *Phase II DMS Monitoring Summary Report*, speaks to the influence of ongoing performance monitoring on the progress made toward the full implementation of the DMS.

> During the EAC meetings, local evaluators, program directors, and regional consultants, met monthly to provide feedback to the Evaluation Team regarding data management, (the DMS software), and other grantee related issues. During these meetings, the members of the EAC would discuss the issues, progress, and status of the DMS Implementation. (*Phase II DMS Monitoring Summary Report*)

Using DMS to Improve Evaluation Capacity

The document analysis showed that the DMS played a role in helping to improve the evaluation capacity of both the state and local programs to meet evaluation requirements and monitor program performance. In addition, the examination of co-occurring code relationships showed that evaluation capacity building was moderately correlated with: data management activities (r = .51), stakeholder engagement in DMS practices (r = .41), the intended uses of the DMS (r = .44), and other evaluation facilitators (e.g., use of DMS reports to monitor program activities) (r = .41). Capacity building was also strongly associated with the intended uses for the evaluation (r = .63) and needs (r = .42). Refer to Figure 11 and Appendix E for a summary of strong and moderate co-occurring codes.

Figure 11. UFPE Factors Related to Evaluation Capacity



Evaluation capacity improved with the implementation of the DMS because its use required that state and local data quality, access, and availability be improved. In order to improve data quality available to the state and local programs, enhancements needed to be made to existing data management, organization, and reporting practices. To improve data accessibility and adoption of the DMS across local afterschool sites, improvements to the technology infrastructure were also needed. To make such improvements, the state worked to identify and leverage existing evaluation resources as well as to create new resources where they were needed.

Identified and Leveraged Evaluation Resources.

The creation of new evaluation tools and resources to support the DMS implementation, as well as the identification and leveraging of existing resources, helped to improve and standardize data management, organization, and reporting practices. Prior

to the DMS implementation, a needs assessment conducted by the SEA showed great inconsistencies not only with regard to DMS practices and data quality, but also with the resources available to support local programs. The DMS helped to increase resources for local and state evaluation efforts of the state-funded afterschool programs.

Prior to the DMS implementation and statewide program evaluation, resources allocated for evaluation at the local level were an average of 4.25% (n = 15 grantees) and 3.36% (n = 19 grantees) of the total program awards in 2002 and 2003, respectively. To meet the federal reporting requirements and to be able to operate the DMS Live Customer Support via e-mail or telephone support was made available to all users during program operating hours. In addition, system administrators at the state and local levels were identified to oversee the general management of all program data, and to manually add, edit, and delete student records from the database online. In addition, within the first year of the statewide annual evaluation, 65% of all grantees (including those that were and were not implementing the DMS) secured staff who were dedicated to performance reporting requirements (e.g., data entry staff), and 20% reported that they planned to obtain additional data support staff. Furthermore, site-level coordinators and other program staff were given access to manage and view program data for their respective centers. Finally, more local evaluators were hired across programs to provide regular program assessment services, such as data collection and analysis, local evaluation reporting, and ongoing assistance with data management.

Upgraded Technology Infrastructure.

In order to implement the DMS, investments to upgrade computer equipment were made so that the equipment met the minimum requirements and specifications

needed to run the software. In addition, the development of training and technical assistance delivery systems to support DMS users required significant time and resource investments.

> Grantees have consistently reported the need for more training . . . [and] should continue to receive training, instruction, and guidance. . . . (*Phase II Training Corrective Action Memo*)

The evaluation found that steps taken to implement many of the evaluation recommendations about ways to bolster the training and technical assistance delivery systems contributed to increasing the capacity of the afterschool programs. In total, 46 DMS training sessions and 925 technical assistance events were conducted during the DMS implementation process. In the first year of implementation, 94% of 31 programs that implemented the DMS received individualized onsite training and attended at least one of six group-training sessions organized and hosted throughout the east, west, north, and south regions of the state. Of the DMS users who responded to the *Phase I DMS User Survey*, the overwhelming majority (90%) attended one or more DMS training sessions, with the majority of those (57%) having attended DMS training more than once. In fact, more than half of the afterschool staff responding to the survey (51%) said that they had last attended training less than 6 months prior to taking the survey. In addition, the 19 future implementers of the DMS received online training via Web-based video modules, and 45% of grantees conducted local grantee-sponsored DMS trainings to prepare their program staff; state regional consultants coordinated Grantee-sponsored trainings delivered by local grantee evaluators to individual grantees to supplement onsite regional training sessions.

By the second year of DMS implementation, all 48 grantees received individualized or group training, and grantees that previously received training attended

refresher trainings. The *Phase II Implementation DMS User Survey* results found that 93% of all afterschool staff engaged with technical assistance. The technical assistance resources used most frequently among afterschool staff included the SEA regional consultants (20%) and the DMS software vendor (44%). This technical assistance support was perceived as being extremely or very helpful by half (50%) of the afterschool staff.

While the surveys provided some strong indicators that capacity to use the DMS effectively among the afterschool programs improved considerably, the evaluation ultimately found that more ongoing efforts to support afterschool programs were needed to sustain the DMS and to achieve the federal and state evaluation and annual reporting requirements. The train-the-trainer model, which came later in a later phase of the DMS implementation in response to the overwhelming need for ongoing professional development and training, further indicated growing use and implementation of the DMS.

> Though these trainings were quite successful, 66% of the survey responders still identified feeling as if they need further training. Though this number seems rather high with the apparent success of the trainings; but, when taken in conjunction with the results of only 33% of responders expressing reservations using the DMS system, this desire for further training seems to reflect a want to become more competent in specific areas rather than feeling an overall lack of competence in the system. (*August 2005 DMS Training Survey Summaries*)

In addition to continuing training in Phase II of DMS implementation, state regional consultants who provided programmatic technical support to grantees and local evaluators identified as DMS mentors received intensive training. Simultaneously, the SEA hired a state DMS trainer to provide ongoing intensive training and technical assistance to grantees with support from the DMS vendor, local grantee DMS mentors, and the state regional consultants.

Enhanced Data Management, Organization, and Reporting Practices.

To achieve better organization of program data and to facilitate the DMS implementation, specific standard operating procedures about participant registration, attendance taking, data entry, and annual performance reporting were also implemented across states. Guidance materials provided to local grantees facilitated the use of the DMS so that state and local programs could meet federal, state, and local performance measurement and evaluation requirements. Having a more streamlined system also aided the evaluation in assessing how programs changed over time by making information that is more consistent available across programs. In doing so, local programs had a central location to access to their program data to be used for local program monitoring and evaluation activities.

> Prior to implementation of [the DMS], grantees utilized various methods for collecting program data and fulfilling reporting requirements. The DMS process … provided all grantees with a tool to collect a complete dataset on all registered students, adult participants, and program service descriptions to meet State and federal reporting requirements. (*Phase I Summative Evaluation Report*)

Technical specification resources and documentation imparted great understanding of the mechanics of the database, performance measures, and evaluation requirements among stakeholders. Standard registration and parental consent forms for use by all afterschool programs in the state better equipped local programs to collect uniform data on participants that aligned with federal reporting requirements. By the end of Phase III, archived interview transcripts revealed that programs had become much better versed in the expectations, rules, and regulations of GA's 21st CCLC. Programs exhibited more clearly articulated procedures for operating 21st CCLC sites.

> Many [local program staff] reported that the DMS was user-friendly because it provided various tools to make program activities more

> efficient, including: Online feedback forms to document and share regional consultant site visit report findings with state and local programs; Partner contribution match reports; Per pupil and family expenditure reporting; and sortable and printable participant rosters with key student identifiers including name, ID, grade level and session/class prepopulated. (*Phase I Formative Evaluation Report*)

Improved Data Quality, Access, and Availability.

The implementation of the DMS enabled program and evaluation data to be housed centrally to make the DMS more accessible and easily available to the state, local grantees, and their program sites. Previous evaluation reporting noted that project directors reported inconsistencies with regard to the types of data collected. Furthermore, use of standard evaluation procedures and instruments to collect demographic and attendance data to meet federal and state reporting requirements varied substantially. For example, a needs assessment conducted in response to changed federal and state reporting requirements for 21st CCLC grant-funded programs determined that there were significant variations in the means employed to collect, manage, and report program and participant data among grantees. It also found inconsistencies in the collection of participant demographic information such as race, gender, age, English language proficiency, and special education status across programs.

By the end of the statewide evaluation project, however, participant demographic and attendance data were being tracked more uniformly using the DMS, which was essential to determining outcomes such as specific program effects on student academic achievement. Ultimately, the streamlining of data gathering, management, and reporting helped to enable programs to focus more on meeting programming standards. In coupling opportunities to improve both program and data quality, the program was better equipped to meet its goals and objectives, including sharing and having the following:

1. Information on effective practices and strategies
2. Additional resources to upgrade center technology and expand childcare services for younger siblings in order to attract and retain more adult participants. Programs benefit from having more training and consultation that focus on sustainability and building partnerships
3. More program materials available in Spanish
4. Data-cleaning processes focused at the center level to improve data accuracy and quality so that data are ready for reporting by deadlines
5. Follow-up training on technical data entry techniques and using reports in the DMS
6. More types of DMS training that can address the different levels of proficiency among trainees and the different uses of the DMS among trainees

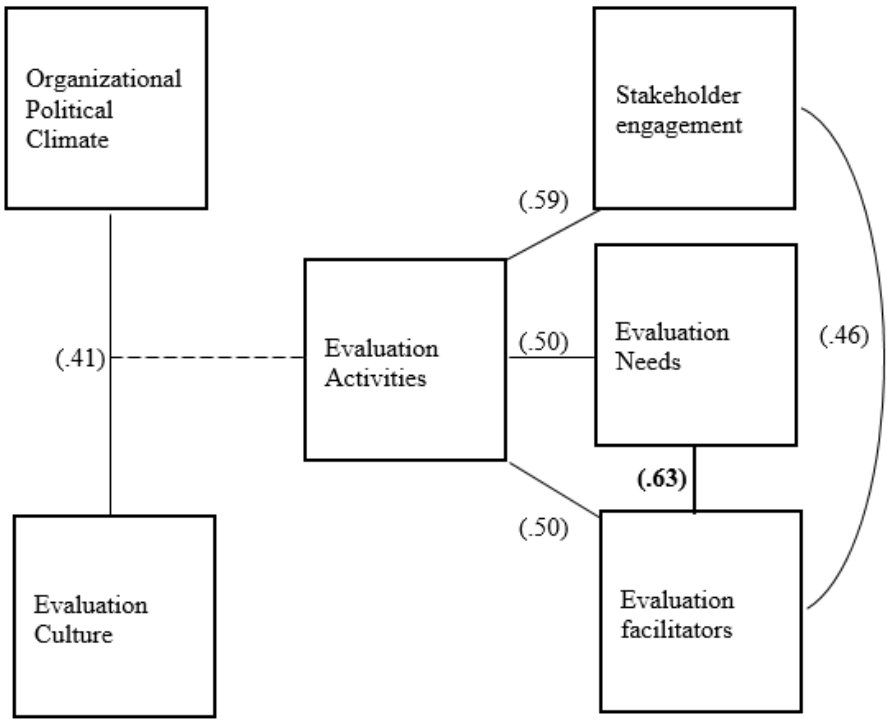
Facilitating Evaluation Use Through DMS Technology

> . . . [T]he DMS has enabled programs to focus more on goal-oriented approaches to programming in order to increase consistent program performance and meet programming standards. (*Phase II Summative Evaluation Report*)

Document analysis results showed that the DMS played a role in ensuring evaluation use by fulfilling its intended purpose to facilitate performance reporting and provide data needed to answer overarching evaluation questions about program effectiveness for the state. Results from co-occurring code analysis indicated that organization political climate and organization evaluation culture (r = .41) were moderately associated. Evaluation activities also were found to be moderately related to: evaluation needs (r = .50), stakeholder engagement (r = .59), and other evaluation facilitators (i.e., use of DMS reports to monitor participant attendance) (r = .50).

Evaluation facilitators were strongly associated with evaluation needs (r = .63) and moderately associated with stakeholder engagement (r = .46) (refer to figure 12).

Figure 12. UFPE Factors Related to Evaluation Use



Met Federal, State, and Local Reporting Requirements.

State evaluation reports and other documents reflected that guidance provided to facilitate the use of the DMS system was effective at helping the state and local programs meet federal, state, and local performance measurement and evaluation requirements. Having a more streamlined system also aided the evaluation in assessing how programs changed over time by making consistent information more available across programs.

Provided Data about Program Effectiveness.

State evaluation reports and other documents reflected that the DMS data effectively met the needs of the evaluation to answer overarching questions about the extent to which the program met its intended goals to improve academic proficiency among students with respect to reading and math performance and to improve literacy among program participants' family members:

> To determine if State performance Goal 2 was met, GSU utilized the family attendance data that was reported into the [federal DMS] as the primary data source… (the DMS) is a primary data source for much of the student performance data… the data set for family participants available in (the DMS) . . . both allow grantees to report as complete and accurate data set as possible to PPICS and allow GSU report on family participation levels . . . (*Phase II Implementation and Outcomes Corrective Action Memo*)

Informed Programming and Quality Improvement Efforts.

The DMS also supplied timely information that programs and evaluators used to identify programming issues and appropriate recommendations. Archived documents highlighted the important role that the evaluation and DMS played in ensuring the identification and implementation of continuous program improvement opportunities. Interview transcripts, in particular, showed that regional consultants felt that having a DMS helped programs to focus its programming on achieving goals. This information about program performance informed future program activities and processes aimed at improving the quality of service delivery.

> The DMS allowed for data-based decision making to improve services at the site, grantee and state levels. (*Final Phase I Summative Report*)

Analysis of documents also showed successful adoption of evaluation recommendations. In particular, the program implemented nearly 100 recommendations to improve program data through the DMS technology over three years.

Recommendations also included specific customizations to the DMS to enhance functionality of the system and to enhance the utility of the system for intended users. Among some of the most significant recommendations adopted and implemented was the creation of a state-level DMS trainer, DMS train-the-trainer cadre, and program process monitoring system.

> . . . [T]he Data Management Systems Trainer (DMS Trainer) position has been established. This individual will work with Regional Mentors – current [DMS] users in Georgia who have demonstrated the abilities and interest – to provide remedial and advanced training to center staff throughout Georgia. . . .. . . Since timely responses to support and re-training needs are critical to the success of the program, a network of regional Grantees and Center staff with proven knowledge of the . . . System must be established to act as a conduit between the DMS Trainer and local users with support and training concerns. . . . Individual grantee and center-level users with sufficient knowledge and abilities in using the . . . system should be recruited to assist local . . . users. The goals are to have Mentors assisting the DMS Trainer perform essential training, support, and reporting tasks. Regional Mentors shall assist the DMS Trainer in many ways . . . (*DMS Vendor Summary of Work Performed for GA 21st CCLC*)

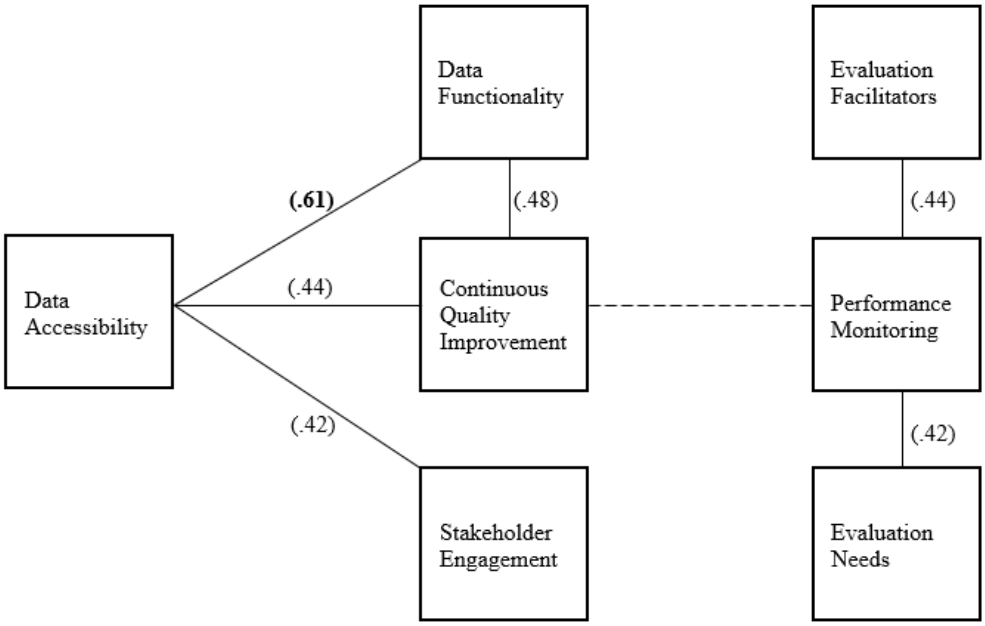
Interconnections between DMS and UFPE

To explore the relationships between emergent themes about the DMS implementation and its role in the evaluation study at the program level, I examined correlations among co-occurring. Based on the results of the correlation analysis, a number of strong to moderate relationships between the qualitative codes were identified (refer to Appendix F for a summary of strong and moderate code relationships and refer to Appendix E for the Qualitative Co-occurring Code Coefficients). Among them were: a strong relationship between the evaluation needs and uses (r = .63), presence of an infrastructure to engage stakeholders and the aims of the evaluation (r = .63), the stakeholder engagement infrastructure and activities implemented as part of the

evaluation process (r = .62), and DMS accessibility and functionality (r = .61) (refer to Figures 11-13).

Moderate relationships were also found to exist, including: between the political climate and organization culture regarding evaluation (r = .41); the intentions around stakeholder engagement and evaluation facilitators (r = .46); the intentions around stakeholder engagement and evaluation needs (r = .41); evaluation requirements and the pre-DMS information systems context (r = .41); evaluation requirements and evaluation use facilitators (r =.41); and evaluation requirements and evaluation needs (r = .41) (refer to Figures 11-13). The pre-DMS information systems context was also found to have moderate relationships with evaluation activities around: use (r = .51), resources available to help engage stakeholders (r = .49), stakeholders' use of evaluation processes and findings (r = .44), and evaluation use facilitators (r = .41). The infrastructure available to engage stakeholders in the evaluation was also moderately related to evaluation needs (r = .42) and facilitators (r = .45). DMS accessibility had moderate relationships with: efforts around program and data quality improvements (r = .44), efforts to engage stakeholders in the evaluation (r = .42), and activities implemented to facilitate use of the evaluation findings and process (r = .40). Efforts around program and data quality improvements were moderately correlated with DMS functionality (r = .48). Lastly, performance monitoring was moderately correlated with evaluation facilitators (r = .44) and evaluation needs (r = .42) (refer to figure 13).

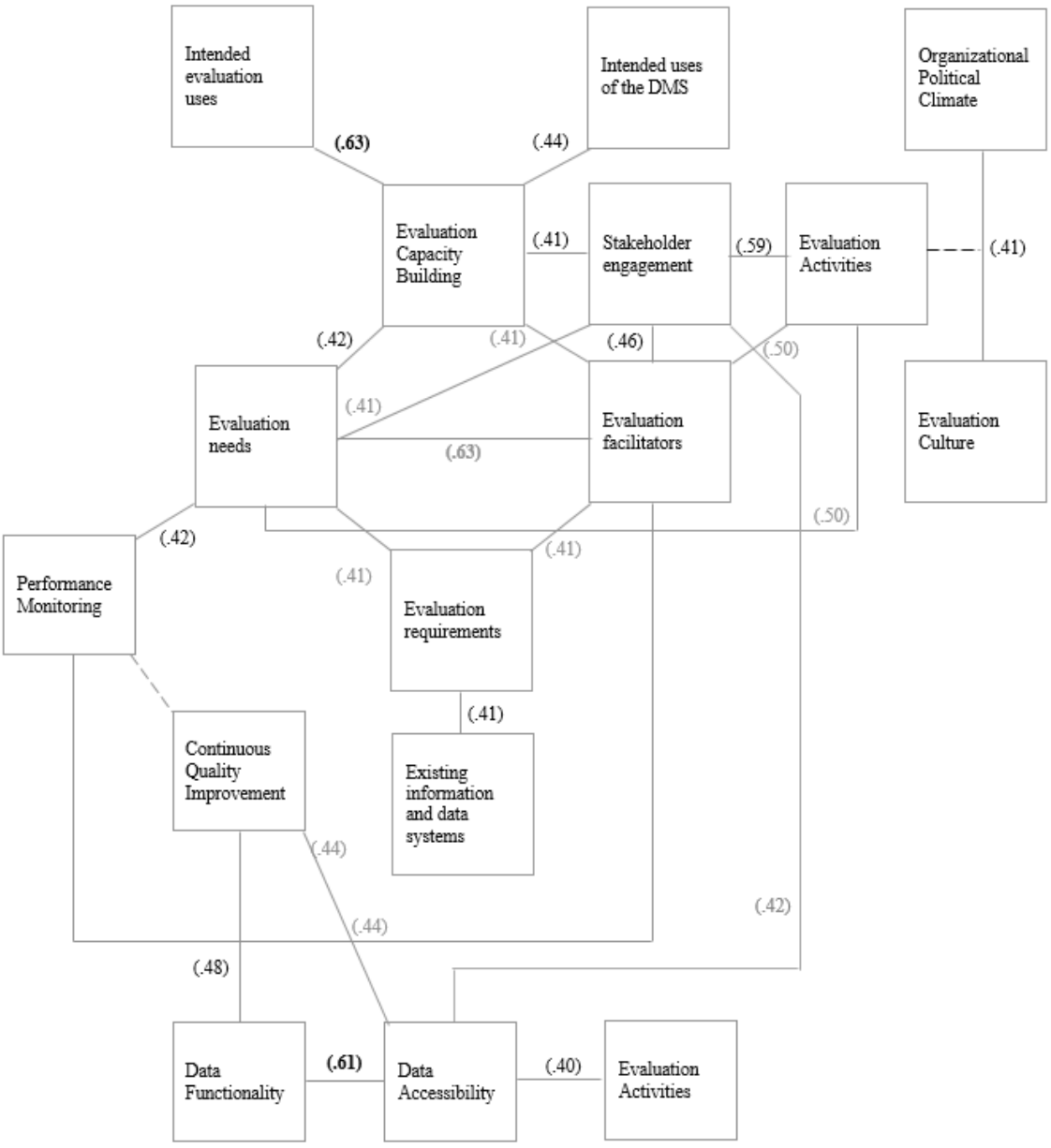
Figure 13. UFPE Factors Related to DMS Evaluation



Overall, the analysis results showed that the DMS played a role in ensuring evaluation use by fulfilling its intended purpose to facilitate performance reporting and provide the data needed to answer overarching evaluation questions about program effectiveness for the state. Results from co-occurring code analysis indicated that organization political climate and organization evaluation culture were moderately associated with evaluation activities. Evaluation activities moderately related to evaluation needs, stakeholder engagement, and other evaluation facilitators (i.e., use of DMS reports to monitor participant attendance). Evaluation facilitators were also moderately associated with stakeholder engagement and strongly related to evaluation needs. Positive moderate relationships also existed among data accessibility and continuous quality improvement, and stakeholder engagement. Furthermore, data functionality and continuous quality improvement were moderately associated. Lastly,

continuous quality improvement was associated with evaluation facilitators and evaluation. Figure 14 depicts the overarching structure and interrelationships found between relevant UFPE and DMSE factors.

Figure 14. Structure of UFPE and DMS Co-Occurring Relationships



DMS Factors Influencing Evaluation Use, Capacity, and Participation

To understand DMS user behaviors and to test relationships between DMS implementation and UFPE themes and co-occurring code relationships, I conducted reliability tests of DMS and UFPE survey items on the secondary DMS User Survey (see Appendix D). These tests assessed the consistency, or internal reliability among items within each of the DSME constructs: Matrices for DMS User Capacity, DMS User Participation, DMS Use, and DMS Capacity Building Constructs.

DMS-ECB Scale

The DMS-ECB scale, including items related to users' perceived skills, was found to have good consistency (2 items; $\alpha = .760$). Results showed that self-perceived DMS skill level significantly correlated with: users' percentage of time working on a computer, computer access in the afterschool program, overall years of computer experience, number of types of computer uses at work, self-perceived computer skill level, recentness of DMS use, frequency of DMS use, and DMS training attendance (refer to Appendix G). The user's perceived skill level with use of computers and the DMS were positively associated ($r(113) = .626$, $p < .05$); as the individual's perception of his/her ability to use computers increased, so did his/her perceived skill level to use the DMS.

DMS-PE Scale

Results for the DMS-Participatory Evaluation scale, which focused on aspects of participant engagement in the DMSE, also showed good consistency across items (4 items; $\alpha = .741$). Recentness of DMS use has strong, moderate, and weak positive relationships with: frequency of DMS use ($r(113) = .739$, $p < .05$), frequency of use of DMS information ($r = .459$, $p < .05$), and recentness of DMS training ($r = .261$, $p < .05$).

DMS use had weak and moderate weak positive relationships with recentness of DMS training ($r(113) = .255$, $p < .05$) and frequency of use for DMS information ($r(113) = .571$, $p < .05$). Lastly, recentness of DMS training had a weak positive correlation with frequency of DMS information use.

DMS-UFE Scale

The DMS-UFE scale is composed of items that indicate usefulness of DMS-related activities and processes executed in an evaluation. While it was the least reliable of all the scales, the alpha coefficient was still acceptable (5 items; $\alpha = .627$). Within this construct, usefulness of DMS information was found to have strong and positive moderate correlations with usefulness of DMS data collection ($r(113) = .726$, $p < .05$), helpfulness of DMS resources ($r(113) = .567$, $p < .05$), and level of confidence with using the DMS ($r(113) = .536$, $p < .05$). The usefulness of the DMS data collection process had a moderate positive correlation with the helpfulness of available DMS resources ($r(113) = .542$, $p < .05$) and the level of confidence to use the DMS ($r(113) = .463$, $p < .05$). The perceived level of helpfulness with DMS resources among users has a moderately positive relationship with the user's perceived level of confidence with use of the DMS ($r(113) = .506$, $p < .05$). Lastly, user level of satisfaction with the DMS had weak to moderate negative correlations with user's perceptions of the usefulness of DMS information ($r(113) = -.198$, $p < .05$) and data collection ($r(113) = -.479$, $p < .05$), the helpfulness of available resources ($r(113) = -.368$, $p < .05$), and their level of confidence with the DMS ($r(113) = -.483$, $p < .05$). A possible interpretation of this finding is that when individuals encountered problems with the DMS, they still found utility in the information, data collection process, and DMS resources. Similarly, when they

encountered problems the system, they did not attribute those issues to their ability to operate the system.

DMS Evaluation Scale

Finally, the DMS Evaluation Scale items illustrate indicators of DMSE. Testing proved this to be the most reliable of all four scales tested (3 items; $\alpha = .767$). Strong to moderate correlations also were found among items related to the number of types of at-work computer use, DMS actions performed ($r(113) = .421$, $p < .05$), and DMS uses ($r(113) = .480$, $p < .05$). As the number of types of work a respondent performed on a computer increased, so did the number of actions performed on the DMS and the number of uses they listed for the DMS. The number of DMS actions performed were also positively correlated with the number of ways that DMS data were used ($r(113) = .686$, $p < .05$).

Differences in the Relationships among DMS and UFPE Factors

Correlation analysis results showed that self-perceived DMS skill level correlated significantly with users' percentage of time working on a computer, computer access in the afterschool program, overall years of computer experience, number of types of computer uses at work, self-perceived computer skill level, recentness of DMS use, frequency of DMS use, and DMS training attendance (refer to Appendix F). Perceived skills around computer use and DMS were positively associated ($r = .626$, $\alpha = .760$). Strong to moderate correlations were found among items related to the number of types of at-work computer use, DMS performed actions, and DMS uses ($r \geq .421$ $\alpha = .767$). Lastly, strong to low positive correlations were also found among survey items related to the recentness and frequency of DMS use and DMS training attendance ($r \geq .255$, $\alpha =$

.752). As exhibited by the following quote, these findings are consistent with those reported in the original evaluation study. Refer to Appendix G for inter-item correlations by DMS constructs.

> The user's perceived skill-level with using the DMS had a small but significant correlation with user satisfaction ($r = .240$, $p < .05$); as the individual's perception of his/her ability to use the DMS increased, so did the individual's satisfaction with the DMS. However, the satisfaction with the DMS was NOT correlated with the individual's skill-level with using computers ($r = .037$, $p > .05$), despite the finding that perceived computer-skill and perceived DMS-skill were highly correlated ($r = .608$, $p < .01$). A possible interpretation of this finding is that when individuals encounter problems with the DMS, they do not view this as a reflection of their own lack of computer skills, but as a fault with the system. A significant, though low, correlation existed between satisfaction with the DMS and the perceived helpfulness of the vendor in solving problems ($r = .272$, $p < .01$). This also supports the idea that those individuals who view the DMS as problematic also view the help that the vendor would offer as being problematic. (*Evaluation of GA 21st CCLC and DMS for Phase II*).

In the next section, I discuss these findings in relation to the current evaluation literature on evaluation practices pertaining to UFPE, DMS and other technologies.

CHAPTER 5

CONCLUSIONS AND DISCUSSION

Increased DMS in UFPE, particularly in the context of afterschool programs, calls for more examination of the role that technology plays in popular contemporary evaluation practice. The results of this study build upon existing tools made available to help evaluation practitioners more effectively create evaluation products and processes that are useable, engaging, and increasingly accessible. Overall, the DSME scale consisted of moderately correlated items that cut across factors relevant to evaluation use, participation, and capacity. Reliability testing illustrated that items have acceptable fit within four sub-scales; however, with further development and validation testing, the DMSE scale may offer a more solid framework for further examination of DMS technology in program evaluation practice. Better understanding of these factors and relationships may enable evaluators to increase the effectiveness of evaluations that incorporate DMSE in ways that advance the intended aims of the evaluation approach. While this study focused on common approaches, such as UFE, PE, and ECB, future inquiries about the relationship between technology and evaluation practice may examine different types of technology like social media, or evaluation approaches such as empowerment or culturally-responsive evaluation models (Fetterman, Kaftarian, & Wandersman, 2014; Hood, Hopson, & Kirkhart, 2015.

Using DMS to Inform Evaluation Practice

Over the course of the DMS implementation, multiple indicators of increased participation, use, and capacity were observed and documented throughout the archive and in DMS User Surveys. These findings are consistent with empirical research that has

demonstrated that the absence of effective technology may impede data and evaluation use because it is limited and labor intensive (Reynolds, Stringfield, & Schaffer 2001; Supovitz & Klein, 2003; Wayman, Cho, & Johnston, 2007). DMS users reported increased experience, frequency of use, and types of use across the DMS implementation. Documented changes in stakeholder activities related to the DMS indicated that the DMS influenced how the evaluation was carried out and who participated in various evaluation activities. Consistent with the study of DMS in K-12 education practice, the DMS implementation transformed a range of evaluation activities, including: the collection of participant data, tracking of programmatic activities, administrative record keeping, data entry and management, performance reporting, local evaluation, and dissemination of local evaluation findings (Wayman, Cho, & Johnston, 2010). Some of the ways that DMS data were used included: responding to inquiries and program information needs of funders, community partners, and parents; monitoring and reporting on program performance and outcomes; informing program improvement efforts; and fulfilling state and federal reporting requirements.

Document analysis and DMS User Survey results also revealed numerous indicators of improved perceptions of the DMS and evaluation with regard to the accuracy and completeness of data needed to meet state and federal performance monitoring requirements. Afterschool program staff indicated that they were either extremely or very confident that the DMS effectively stored program, administrative, and student data; improved data accuracy; reduced missing data; and fulfilled federal and state evaluation and performance reporting requirements. Specific practice improvements of the DMS that the document authors and DMS users noted include:

1. Centralized storage and management of program records across sites with real-time and remote accessibility; transferability; and transportability for programming, monitoring, and evaluation uses
2. Easy-to-use tools (e.g., quick registration, attendance scanner wands) and forms for recording and tracking program data
3. Easy-to-access reports (e.g., attendance rosters, daily program schedules, snack reports)
4. User-friendly resources and technical support (i.e., help pages and live telephone support)

The DMS changed the nature of the relationship between the evaluator and key stakeholders, particularly early adopters of the DMS technology, who served as champions and advisers to the evaluation because of the expertise, buy-in, and support offered to the evaluation.

Evidence of Capacity Building

Through my examination of the texts, I learned which of the myriad of activities involved in implementing the DMS were the most salient and critical to UFPE, particularly educational research texts that focused on the role of technology use among students on their academic outcomes. The texts, which were available through a preserved electronic archive, reflect the formative implementation of the DMS and therefore represent the most critical events, activities, and results of the implementation. Cumulatively, the documents in the archive indicated that the DMSE required a high level of engagement, communication, coordination, and collaboration among the software vendor, funder, early adopters, and the evaluation team. These findings are supported by

educational research studies that hypothesized that instructional DMS user behaviors among students and educators in k-12 classrooms throughout the school day play a critical role in instructional practices and student outcomes (Varlamis, Ioannis, & Marianthi, 2005; Wayman, 2005, 2008; Wyaman, Cho, & Johnston, 2007; Wayman & Stringfield, 2006; Wayman et al., 2004). I liken the findings about DMS use to facilitate and evaluate student learning in k-12 education to the instances of process use observed in this study among intended users of afterschool program evaluations that produced evaluative learning. Like Wayman et al. (2004) concluded from a survey of student DMS users, this study also found that activities to ensure that grantees received adequate training, technical assistance, monetary and material resources, guidance, and opportunities for peer-facilitated learning and capacity building around the use of the system were relevant to UFPE practice. As part of the evaluation team, one of the prominent roles I played was to document, compile, assess, and determine these needs; communicate them to the funder and software vendor; and support their development and implementation. Evaluation researchers such as Kaplan and Shaw (2004) agree that it is important to address the ways that technology affects and intersects with evaluation theories and methods.

While there is a lack of literature on evaluation practice that helps to further understand these findings, they are consistent with findings reported from research on DMS adoption in educational research, which support that factors such as perceived technical competence lead to DMS participation. Additionally, educational research provides credible evidence of the linkage between DMS adoption and use and the

evaluation of student learning outcomes (Jacksi, Ibrahim, & Zebari, 2018; Stringfield, Reynolds, & Schaffer, 2001; Supovistz, & Kelin, 2003).

The implementation of the DMS necessitated standardization of performance and evaluation indicators and data sources in order to comply with federal and state requirements. Indeed, the standardization of how the program collected and reported its data improved the quality of data available for evaluation and performance monitoring (Varlamis, Ioannis, & Marianthi, 2005; Wayman, Cho, & Richards, 2010). In addition, common variables and data allowed for the linking of key variables needed for outcome evaluation designs such as structural equation modeling, which identified student, school, and district variables that influenced program outcomes.

The improved quality of data fostered by the institution of federal reporting standards enabled various types of evaluation use, including process use. The DMS was effective at collecting data needed both for federal reporting and to answer specific evaluation questions of the state-level program funding agency, such as:

1. Are administrative and service goals and objectives being met?
2. Are administrative and service data effectively being reported in PPICS?
3. Are afterschool programs being implemented with fidelity?
4. Are the intended students and families being reached by the program?
5. Are the enrollment and attendance of any subgroup disproportionately less or more than those of others?
6. Once in the program, how many students and families attend the program for 30 or more days in one academic year?
7. Is participant attendance consistent over time?

The implementation of the DMS facilitated these specific programmatic activities,:

1. Participant enrollment and registration
2. Participant and family service and case management
3. Coordination of services and referrals for participants
4. Participant monitoring and engagement
5. Continuous program improvement

The implementation of the DMS facilitated the attainment of specific evaluation objectives, including objectives to measure the following aspects of the afterschool program:

1. Characteristics and demographics of participants
2. Quality of programs, activities, and services such as staffing, enrichment and educational activities, nutrition, organizational structure, linkages to regular day school, family involvement
3. Program performance and dosage levels
4. Program outcomes among participants
5. Program participation impact on academic achievement (i.e., reading and math proficiency, on-time promotion, and youth and family school engagement)

DMS data were integrated and triangulated with site visits, student and parent engagement surveys, and state assessment scores, and in many cases helped to make the collection of these additional data possible. The implementation of the DMS also allowed for the production of interim reports (i.e., *Phase III Snapshot Reports* for the summer, fall, and spring semesters) that provided preliminary data and information regarding the

progress of each program and the state program overall on key outcome indicators. These interim reports helped to foster corrective actions to sustain continuous program improvements and to identify areas of poor program performance that needed to be addressed.

Adoption of the DMS required significant resources, buy-in and support, coordination, and information sharing, which relied on establishing strong data-sharing agreements, implementing stringent data security procedures, and bolstering the technological infrastructures across 21st CCLC sites. Partners, such as the DMS vendor, were essential resources that provided support and technical expertise to support the evaluation and DMSE.

Once implemented, the DMS required ongoing customization, technical support, and training to meet the changing needs of users and to help users stay abreast of system operations and changes. Ongoing monitoring of the system helped to identify inefficiencies and challenges (e.g., difficulty interpreting displays, inefficient navigation, and insufficient system performance) that users experienced. These insights were critical to which helping make needed DMS customizations, professional development, training, and technical assistance. Ongoing DMS monitoring also helped to ensure that identified issues were addressed, and over time, DMS users reported experiencing fewer and less frequent problems with the DMS. While many issues, especially with student-level data (e.g., inconsistent records/data, unclear data fields), arose early on in the implementation process, DMS data issues decreased as users' skills and confidence in using the system improved.

Drawbacks and Pitfalls of Educational DMS

Although DMS are perhaps the least-glamorous type of technology-related investments in education, they appear to be among the most-often deployed in the education sector (Heritage, Lee, Chen, & LaTorre, 2005; Spielberger, et al., 2016; Wayman, 2005; Waymanet & Cho, 2008; Wayman, Stringfiels, & Yakimowski, 2004). DMS are among the most common technologies used to disseminate information in the field of education as policy has mandated the development and expansion of DMS infrastructures. While they are almost universally applied, some systems are more or less sophisticated than others. Policy mandates calling for DMS to compile, manage, and share education data have required educational organizations make substantial investments in these systems. However, the sheer number and magnitude of such investments, combined with a lack of rigorous studies on their implementation and effectiveness, point to a potential for waste and inefficiencies. Anecdotal evidence suggests that DMS projects are often behind schedule and/or have to be significantly reworked. Given the seeming ubiquity of their use in donor-funded projects and the absence of useful planning materials, case studies on DMS planning and deployment, as well as best practices and lessons learned, would be useful planning tools for donor staff and educational policy makers. In order to be effective DMS not only should help comply with accountability requirements, they also must be flexible and responsive to the needs of SEA, local districts, students, and parents, and must be designed for easy use with tools for training and technical assistance.

The effective use of DMS can be confounded by a variety of social and cultural factors. Local governmental authorities may have similar complaints about their

participation in DMS managed by a central governmental authority, especially where there is no history of (and trust in) sharing information and receiving anything useful in return. Information systems in the education sector are often designed by technical people, ignorant of prevailing educational policies and with insufficient input from education specialists. Design of stand-alone systems that lack integration with information systems generally fail to meet the needs of various users and lack of buy-in and use among intended users. Integrating afterschool program DMS technology with other information systems may therefore increase and enhance coordination, collaboration, and use of the DMS and other evaluation products.

Benefits and Successes of DMS in Education

Despite the costs and time needed to establish DMS in education, the long-term benefit is that they improve the provision of access to information for programs and their stakeholders by making it faster and easier. Undoubtedly, the increased proliferation of DMS in education has given students, teachers, and parents increased access to school resources such as, attendance records, exam results, and training information. With flexible solutions, such as virtual databases, cloud computing, and online social networking/collaborative tools, it has become easier to grow and change database requirements to meet constantly changing needs.

After the investment in setting up the infrastructure, extant data are migrated and new data collection protocols and procedures are implemented, educators, students, and parents are able to communicate and access academic information more easily. Schools and school systems may be better equipped to manage records while simultaneously simplifying data access (Wayman & Stringfield, 2006; Wayman, Cho, & Richards,

2001). In addition, if they have improved data management fewer resources may need to be spent on maintenance, freeing information technology employees to focus on strategic tasks that aid teaching and learning (Supovitz & Klein, 2003).

The implementation of DMS has made a significant impact on how schools conduct business, especially with regard to compliance with federal, state, and local policies. DMS emerged to enable informed decisions with the goal of increasing access, efficiency, effectiveness, equity, and quality of education (Wayman & Cho, 2008). In education, DMS provide necessary mechanisms for the collection and management of needed information and data, and they often foster an environment in which the demand for information drives its use.

Since their initial development, DMS have become more comprehensive, integrated, and functional, as in the production of educational data and information that is at the cornerstone of information-based decision-making. DMS in education are designed and used to collect, manage, and report on large interdependently connected educational datasets. They identify and facilitate meaningful changes in education, and they are integral to facilitating the monitoring and surveillance that hold educational systems accountable for the outcomes in students they serve and the public resources for with they serve as custodians to carry out related activities (Spielberger, Axelrod, Dasgupta, Cerven, Kohm, & Mader, 2016).

Together DMS and evaluation enable the use of data to inform education practices in afterschool programs. Increased demand for and attention to accountability in education have demonstrated that gains in evaluating academic performance show increased thoughtful application and use of DMS and the information it produces. These

applications have been positively correlated with a range of measures on student achievement (e.g., Heritage, Lee, Chen, & LaTorre, 2005; Wayman, 2005; Wayman & Stringfield, 2006; Wayman, Stringfield, & Yakimowski, 2010), with the most direct correlations being between school process improvements and DMS use (Spielberger et al., 2016; Waymna, 2005).

In addition, DMS are also credited for their ability to organize, process, output, and share educational data, statistics, and information in a relatively timely and reliable fashion. These system functionalities and features often serve a number of different audiences, including funders, educational researchers, administrators, teachers, parents, students, and the public at large (Spielberger et al., 2016; Wayman & Stringfield, 2006). Frequent uses of DMS data and information by these various constituents may include planning, budgeting, policy formulation, educational management, resource allocation, policy research and analysis, monitoring and evaluation, communication, and collaboration.

DMS also often serve as a set of formalized and integrated operational processes, procedures, and cooperative agreements through which data and information about schools and learning are transacted, shared, analyzed, and disseminated. In particular, data about school facilities, teachers, students, learning activities, and evaluative outputs are integrated and assessed for educational decision making at every level of the educational hierarchy, and at the center of these activities are DMS (Wayman, 2005; Wayman & Cho, 2008).

Increasingly, DMS is becoming more complex and robust, typified by increased integration and linkages between international, national, state, and local levels, with state

and local systems having a high likelihood of seamless integration. As their ability to better share and integrate data improves, the overall effectiveness and use of data in decision making also increases the production of timely and reliable data and information. This increased timeliness and reliability of DMS-produced information has helped to improve user confidence over time and trust in the data, which has greatly contributed to increased use (Wayman, 2004; Zhao & Frank, 2003). Similarly, gains in the adoption, integration, relevance, and value of DMS among users will extend into other areas.

The use of DMS for educational administration is not widely present in academic research, those studies that do exist indicate that DMS use and integration are occurring not only among school administrations at federal, state, and local levels, but also among teachers, students, and education support staff (Satcher, 2005; Wayman, 2005, 2006; Wayman & Cho, 2008; Zhao & Frank, 2003). There is a wealth of literature on the application of technology in instruction, and these studies support increased use of DMS for administration. For example, Bauer's study of teachers and technology use (2005) found that teachers increasingly were using educational technology more often for administrative record keeping than direct classroom instruction. Moreover, use of technology as a tool to enhance productivity, expand access to information, and improve communication was among two of four primary areas of growth in educational technology utilization in the previous decade (1990 to 2000) (Fouts, 2000).

Gauging the Future of DMS in Educational Evaluation

Schools and school systems have made significant investments of time and resources in collecting, processing, and managing more and better data through education

data management information systems. However, all too often, DMS design and development are criticized for being too reactive to policy rather than proactive and on the forefront of innovative technological advances, which stifles operation and utilization for policy decisions. This study examined the role of technology in utilization-focused participatory evaluation practice as a means to illustrate why proactive thought and consideration of the use of DMS in conjunction with participatory evaluation models may be warranted. In being proactive about the way that DMS is incorporate into evaluation practice, including design, planning, and implementation of an evaluation, evaluations and programs maybe more targeted in the ways that they choose the use the DMS in the evaluation. From the study, critical factors that influence evaluation use, capacity, and participation among evaluation stakeholders and intended users were formed. Among these were critical organizational and contextual aspects of information and data management within education, along with the resulting environmental changes arising from the creation of information demand and shifts toward openness and increased access to information sharing and use. Furthermore, the relationship and intersection between UFPE evaluation practices and DMS implementation were illuminated and a potential instrument to help evaluators ensure that critical aspects of DMS technology implementation are attended to in their evaluation studies was presented. Future work to further validate items in the DMS checklist may help to make the instrument more reliable and useful for evaluation practitioners.

The evaluation of educational programs aims to understand and improve programs' responsiveness to program participant and stakeholder needs. Fundamentally, many organizational, contextual, and social factors affecting evaluation capacity and

infrastructure play a part in the merit and worth of an evaluation and the degree to which stakeholders engage in and use process, systems, and products (Chouinard & Cousins, 2009; Greene, 2000; Guba & Lincoln, 1989). More participatory evaluation theorists now call for models that not only focus on building evaluation capacity within organizations by critically examining factors that play a critical role in the evaluation, but also by considering ways that technology is transforming evaluation practice (Amos & Cousins, 2007; Cousins & Leithwood, 1986; Galen & Grodzicki, 2011; Nacarella, 2007; Preskill, Zuckerman, & Matthews, 2003). The dramatic expansion of information technologies, such as student information systems in education programs, make it necessary for evaluators to build their knowledge and skills around how to design and execute evaluations that can integrate and leverage technology in ways that enhance how stakeholders engage and use evaluation for the purposes of continually improving outcomes. In afterschool especially, there are more demands for programs, services, and evaluation of the outcomes and impact that they are having on students. As evaluators seek ways to maximize and make the most efficient use of valuable resources, more tools, examination, and study of the role that technology can play are needed. This study illustrates some of the existing relationships between UFPE practice and DMS in the context of afterschool programs to this end.

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APPENDICES

APPENDIX A

GA 21ST CCLC STATEWIDE EVALUATION DATA ARCHIVE CONTENTS

File Type	**Related File Extensions**	**Frequency**
Audio/Voice	DSF, DSS, dvf, mp3	485
Document	Dat, Doc, docm, docx, pdf, pub, rtf, spo, txt, wps	3,639
HTML	Css, html, js, msp	30
Image/ Graphic	Gif, jpg, acb, opx, png, spj, tif	2,089
Metadata	~DF, emf, enl, info, lnk, log, lok, net, out, pin, shs, tmp, wmf, xml	384
Multimedia	Avi, pps, ppt, pptx	121
Operating System	CPM, opt	2
Spreadsheet	Csv, tab, wbk, elx, xlsx, xlw	1,397
Structured Database	Db, fil, fp5, fp7, frm, gwi, hpr5, htm, mdb, MYD, myi, sav, sps	425
Total		8,572

APPENDIX B

DATA ARCHIVE SAMPLING SYNTAX

The syntax below tells the operating system, shell, or other editors what kind of program is used to run this script. In this case, it is BASH, the "Bourne Again Shell," the default Linux terminal. It works like DOS to determine how input fields are separated into chunks and create a .CSV file based on directory contents that contains the file path, name, extension, size, and checksum. Each column will be processed independently, then joined together.

Step 1: Write the header row of the CSV file: The > operator stores the output into a file instead of outputting into the terminal.

```
echo "NAME,EXTENSION,FULL_PATH,BYTESIZE,CHECKSUM,PATHS" >
20150130-syreeta-dissertation.csv
```

Step 2: Prepare a list of all files. The `` is called a backquote. It lets you evaluate a command within another command.

```
echo "Step 2"
FILES=`find "/mnt/syreeta/" -type f`
FILE_NAMES="$(for EACH in `echo "$FILES"`
do basename "$EACH"
done)"
```

Step 3: Prepare a list of all file extensions extracted from the files.

```
echo "Step 3"
EXTENSIONS="`echo "$FILES" | sed -r 's/^.+\.([A-Za-z0-9]+$)/\1/'`"
```

Step 4: Prepare a list of all directories that each file is in.

```
echo "Step 4"
FULL_PATH="$(for EACH in `echo "$FILES"`
do dirname "$EACH"
done)"
```

Step 5: Prepare a list of all file sizes for each file. The size will be in bytes.

```
echo "Step 5"
FILESIZE="$(for EACH in `echo "$FILES"`
do du "$EACH" | cut -f 1
done)"
```

Step 6: Prepare a list of checksums (digital fingerprints) for each file. We can remove duplicates on these files

```
echo "Step 6"
CHECKSUMS="$(for EACH in `echo "$FILES"`
do shasum "$EACH" | cut -f 1 -d" "
done)"
```

Step 7: Prepare a series of columns of uneven widths based on the path to allow for sift-n-sort

```
echo "Step 7"
SIFTABLE_PATHS="`echo "$FULL_PATH" | sed -e 's/,/g/' -e 's/^\///' -e
's/\//,/g'`"
```

Step 8: Combine each of these fields!

```
echo "Step 8"
```

Syntax for Steps 1–8

```
CURRENT_LINE=0
for FILE in `echo "$FILES"`
do CURRENT_LINE=$[$CURRENT_LINE+1]
echo "LINE $CURRENT_LINE"
echo "`echo "$FILE_NAMES" | head -n "$CURRENT_LINE" | tail -n 1`,\
`echo "$EXTENSIONS" | head -n "$CURRENT_LINE" | tail -n 1`,\
`echo "$FULL_PATH" | head -n "$CURRENT_LINE" | tail -n 1`,\
`echo "$FILESIZE" | head -n "$CURRENT_LINE" | tail -n 1`,\
`echo "$CHECKSUMS" | head -n "$CURRENT_LINE" | tail -n 1`,\
`echo "$SIFTABLE_PATHS" | head -n "$CURRENT_LINE" | tail -n 1`" >>
20150130-syreeta-dissertation.csv
```

The syntax below imported all files from network drive where the project archive was located. All Zip files were compressed into a "directory" and then removed. Then a scan was conducted to identify duplicate files. All duplicate files and Zip files were removed. A scan of files by extension was then conducted and file extensions for software that is incompatible with Atlas.ti were removed (i.e., WAV, Lisrel, metadata, etc.). Last, *r* was instructed to retain specific file types (i.e., MS Office Word and PowerPoint and PDF file extensions) in a new directory. If file types were out of date, then *r* converted those files to the current file format.

Step 9: Deleted all binary duplicates. Log retained as 21-fdupes.txt

Steps 10: Deleted all empty directories. Log retained as 21-cleanlinks.txt

Step 11: Scanned count of files by extension. (See script below)

Step 12: Removed 3085 Dropbox metadata .attributes:$DATA files.

Step 13: "Removed ""LisrelSoftware"" directory."

Step 14: Recoded 78 .WAV files as .MP3 files.

Step 15: Removed .WAV files

Step 16: Prepared census of file types by extension. Saved as 21-census.csv.

Step 17: Given the following extensions to retain: doc, docm, docx, pdf, and ppt/pptx as pdf.

Step 18. Renamed files to include path as filename (rename 's/\//_-_/g')

Step 19: Moved files of desired extension to ""distbin"" subfolder (e.g. for each in `find ./ -type f -iname '*.doc'`;do mv ""$each"" ""distbin/`echo $each | sed -r -e 's/^\.\///' -e 's/\//_-_/g'`"";done)

Step 20: Used libreoffice to convert ppt/x to pdf (ilbreoffice --headless --invisible --convert-to pdf *.ppt)

Syntax for Steps 9–20

```
#!/bin/bash
IFS=$'\n'
find "/mnt/21/" -type f > syreeta.files
echo "NAME,EXTENSION,FULL_PATH,BYTESIZE,CHECKSUM,PATHS" >
20150130-syreeta-dissertation.csv
let MY_COUNT=0
cat syreeta.files | while read MY_FILE
      do let MY_COUNT+=1
      NAME=`basename "$MY_FILE" | sed 's/,//g'`
      EXTENSION=`echo "$MY_FILE" | sed -r -e 's/^.+\.([A-Za-z0-9]+$)/\1/' -e
's/,//g'`
      FULL_PATH=`dirname "$MY_FILE" | sed -e 's/,//g' -e 's/\/mnt\/21\///'`
      SIZE=`du "$MY_FILE" | cut -f 1`
      CHECKSUM=`shasum "$MY_FILE" | cut -f 1 -d" "`
      SIFTABLE_PATHS="`echo "$FULL_PATH" | sed -e 's/,/g/' -e 's/^\///' -e
's/\//,/g'`"
      echo
"$NAME,$EXTENSION,$FULL_PATH,$SIZE,$CHECKSUM,$SIFTABLE_PA
THS" >> 20150130-syreeta-dissertation.csv
done
```

APPENDIX C

DOCUMENT ANALYSIS CODEBOOK

Domains				Themes-Codes	Definition
Participatory Evaluation	Utilization-focused Evaluation	Evaluation Capacity Building	Data Management System Evaluation		
•	•		•	*Facilitators & Barriers	Implementation resources
•			•		DMS accessibility
		•	•		Technical support needs
		•	•		DMS operability
		•	•		Training needs
		•	•		User knowledge, attitudes and skills
		•	•		Tools, processes, and guidance
	•		•	*Implementation activities	Performance monitoring
•		•	•		Continuous quality improvement
	•		•		DMS implementation goals and objectives
•			•		Dissemination
•		•	•		Training and technical assistance delivery
		•	•	*Performance	Training/Technical Assistance quality
•		•	•		Compliance
		•	•		Functionality
		•		Context	External forces (i.e., funding agency, partners, professional organizations)
	•	•			Information priorities/needs
	•		•		Organization political climate
	•	•	•		Organizational adaptability to change
	•				Organizational culture
		•	•		Organizational decision-making
	•	•			Organizational learning orientation
		•			Organizational support
		•	•		Responsibility for evaluation
•	•		•	Design	Analysis
•	•		•		Evaluation data sources

Domains				Themes-Codes	Definition
Participatory Evaluation	Utilization-focused Evaluation	Evaluation Capacity Building	Data Management System Evaluation		
•	•		•		Evaluation methods
	•		•		Evaluation questions
	•	•	•		Implementation plans, timeline
	•	•			Interpretation
•	•	•			Post-evaluation follow-up
	•	•	•		Reporting (i.e., presentation, dissemination, communication)
•	•			Infrastructure_	Commitment/buy-in to evaluation
	•	•	•	_Info Systems	Available data/information/systems
		•	•	_Experts	Evaluation Advisors, consultants, experts
	•	•	•	_Champions	Evaluation champions/advocates
	•		•	_Credibility	Evaluation credibility/performance/satisfaction
•	•	•		_Staff Qualifications	Evaluation staff and staff qualifications
		•	•	_Sustainability	Evaluation sustainability
•	•	•	•	Intended Uses_	Engagement in evaluation among intended users and stakeholders
	•	•	•	_Engagement	Evaluation activities
	•	•	•		Evaluation aims, goals and objectives
	•		•		Facilitators and barriers to evaluation use
•	•	•	•		Needs for evaluation (i.e., accountability requirements)
	•			Readiness_	Attitudes toward evaluation
	•			_Stakeholders	History with evaluation
		•	•	_Requirements	Evaluation Intended users and stakeholders
	•	•	•	_Eval Expertise	Evaluation requirements
	•	•		_Eval Support	Knowledge of evaluation
	•	•		_Resources	Support for evaluation
	•	•	•		Time and resources for evaluation

Note: Adapted from: Volkov, B., & King, J. (2007). *A checklist for building organizational evaluation capacity.* Available online at https://wmich.edu/sites/default/files/attachments/u350/2014/organiziationevalcapacity.pdf; Patton, M. (2013). *Utilization-Focused Evaluation (U-FE) Checklist.* Available online at http://www.pointk.org/resources/files/UFE_checklist_2013.pdf; Work Group for Community Health & Development. (2018). *PE Checklist.* Available online at https://ctb.ku.edu/en/table-of-contents/evaluate/evaluation/participatory-evaluation/checklist. An asterisk (*) indicates emergent DMSE codes developed from grounded inductive coding.

APPENDIX D

DMS USER SURVEY

Thank you for making the time to participate in this survey regarding your experiences with the GA 21st CCLC Data Management System (DMS). The purpose of this survey is to gather information from Georgia users on the implementation and impact of the DMS. This information is being collected by Georgia State University in order to inform efforts to improve the functionality of the DMS as well as the training and support that is provided to you. Your responses will be kept confidential and will be reported in summary form only. Please send an e-mail to sgowen@gsu.edu if you have any questions regarding the survey. Please feel free to log in to the DMS while you are taking the survey.

No.	Questions/Item	Factors	ID	Response Values
1	Please select which position best describes your role with the afterschool program. **If you work in more than one position, please select the position that requires more of your time.**	None	Primary Job	Nominal • Data Entry Staff • Administrative Staff • Instructional staff • Site Coordinator • Project Director • Local Evaluator • SEA Staff • Regional Consultant • Other
2	What percent of your time working for the afterschool program requires using a computer?	Computer Skills/ Access	U1	Ordinal • 0%–25% = 1 • 26%–50% = 2 • 51%–75% = 3 • 76%–99% = 4 • 100% = 5
3	At your afterschool site do you...	Computer Skills/ Access	U2	Nominal • Have your own computer workstation • hare a computer work station with multiple users • Not have access to a computer
4	How many years have you been using a computer?	Computer Skills/ Access	U3	Scale
5	How do you use a computer for your work with the afterschool program? (Check all that apply)	Computer Skills/ Access	U4	Scale

No.	Questions/Item	Factors	ID	Response Values
6	Please rate your general skill level with using computers.	Computer Skills/ Access	U5	Ordinal • Expert = 4 • Advanced = 3 • Intermediate = 2 • Beginner = 1
7	Please rate your skill level using the DMS.	Engagement/ Participation	AT1	Ordinal • Expert = 4 • Advanced = 3 • Intermediate = 2 • Beginner = 1
8	How long have you been using the DMS system?	Engagement/ Participation	AU1	Ordinal • Less than 1 month = 1 • 1–6 months = 2 • 7–12 months = 3 • More than 12 months = 4
9	When was the last time that you logged on to the DMS? ***If you logged on to the DMS today only to help you complete this survey, do not count today as your most recent login***	Engagement/ Participation	AU2	Ordinal • Today = 5 • Less than 7 days ago = 4 • 7–14 days ago = 3 • 15–30 days ago = 2 • More than 30 days ago = 1
10	How often do you log on/enter the DMS system?	Engagement/ Participation	AU3	Ordinal • Once a month = 1 • Once every 2 weeks = 2 • Once a week = 3 • 2–4 times a week = 4 • 5–7 times a week = 5
11	How many DMS training sessions have you attended?	Engagement/ Participation	AT2	Ordinal • None = 1 • 1 time = 2 • 2 to 3 times = 3 • 4 to 5 times = 4 • More than 5 times = 5
12	When was the most recent DMS training session you attended?	Participation	AT3	Ordinal • Within 30 days = 5 • 1–2 months ago = 4 • 3–6 months ago = 3

No.	Questions/Item	Factors	ID	Response Values
				• 6–12 months ago = 2 • More than a year ago = 1
13	Do you want to participate in more DMS training sessions?	Participation	AT4	Dichotomous 1 = yes, 2 = no
14	What actions have you performed with regard to the DMS? (Check all that apply)	Use	AU4	Scale
16	How do you use the data that is in the DMS? (Check all that apply)	Use	AU6	Scale
17	How frequently do you use the information contained in the DMS to inform your work?	Participation	AU7	Ordinal • Every day = 7 • Several times a week = 6 • Once a week = 5 • Several times a month = 4 • Once a month = 3 • Once every few months = 2 • Never = 1
18	How useful to you is the information contained in the DMS…	Use		Scale
19	How useful do you think the data collected in the DMS is...	Use		Scale
20	How often have you experienced any of the following problems when using the DMS.....	Capacity		Scale
21	How helpful have the following resources been to you in using the DMS system.....	Capacity		Scale
22	Please indicate who you contact most frequently to ask for help with the DMS.	Capacity	S5	Scale
23	How helpful is each of the following parties in addressing questions or problems you have about the DMS?	Capacity		Scale
24	Please indicate your overall level of satisfaction with the DMS system.	Capacity	E28	Ordinal • Extremely satisfied = 4 • Very satisfied = 3 • Somewhat satisfied = 2 • Not at all satisfied = 1
27	Please indicate the level of confidence you have in the DMS system.....	Capacity		Scale

APPENDIX B
DMS USER SURVEY DESCRIPTIVE STATISTICS

DMS User Survey Items	Mean	SD	N
2 Percent time working on a computer	2.740	1.155	115.000
3 Computer Access in Afterschool Program	2.770	0.547	115.000
4 Computer experience in years	14.579	5.942	114.000
5 Number of Types of Computer Uses at Work	6.290	2.127	115.000
6 Self-Perceived Computer Skill level	2.320	0.629	115.000
7 Self-perceived DMS Skill level	2.900	0.777	115.000
8 DMS Experience in Years	3.060	0.830	115.000
9 Recent DMS Use	3.600	1.262	115.000
10 Frequency of DMS Use	3.300	1.510	115.000
11 DMS Training Attendances	2.640	0.703	115.000
12 Recent DMS Training	2.640	1.028	115.000
13 Desire for More DMS Training	1.360	0.481	115.000
14 Number of Action Performed on DMS	6.150	2.845	115.000
16 Number of Ways DMS Data Used	4.020	2.263	115.000
17 Frequency of Use for DMS Information	4.610	2.059	115.000
18 Usefulness of DMS Information	2.280	1.139	115.000
18a When you need data to provide evidence on the outcomes obtained by site/program	2.430	1.339	115.000
18b When you need to respond to inquiries about your site/program	2.440	1.285	115.000
18c When you want to compare your sites/programs	1.980	1.389	115.000
18d When you want to identify program areas that need improvement	2.110	1.316	115.000
18e When you want to summarize site/program attributes (e.g., activities provided, staffing levels)	2.430	1.338	115.000
19 Usefulness of DMS Data Collection	2.342	1.269	115.000
19a For monitoring performance of students	2.210	1.399	115.000
19b For monitoring performance of the afterschool site/program	2.490	1.307	115.000
19c For monitoring quality of afterschool site/program	2.330	1.329	115.000
20 Number of DMS Issues Encountered	40.722	7.702	115.000
20a Data that I previously viewed in DMS was no longer viewable.	3.170	0.881	115.000
20b I had difficulty determining which required data fields for my site/program were complete.	3.110	0.856	115.000
20c I had difficulty finding the information I was seeking.	2.970	0.800	115.000
20d I received an error message when attempting to save data.	3.190	0.674	115.000
20e I was unable to log on to the system.	3.280	0.744	115.000

DMS User Survey Items	Mean	SD	N
20f I was unable to view recently saved information in DMS.	3.170	0.816	115.000
20g Information collected in DMS was inconsistent with how data were collected locally.	3.120	0.880	115.000
20h Information contained in an DMS system generated report did not match data entered into DMS.	3.160	0.884	115.000
20i The page I was trying to access could not be displayed.	3.110	0.710	115.000
20j The system was running slow when I tried to download/export data.	3.070	0.856	115.000
20k The system was running slow when I tried to move between modules.	2.960	0.730	115.000
20L The terminology used on a given page was unclear or confusing.	3.320	0.812	115.000
20m The way the information displayed made it difficult to interpret.	3.090	0.894	115.000
21 Helpfulness of DMS Resources	3.107	1.136	115.000
21a DMS tutorials (found on the DMS Help page)	2.990	1.430	115.000
21b DMS Reporting Guidance (found on the 21st CCLC Discussion Database)	2.810	1.438	115.000
21c Instructional pages (found on the DMS Help page)	3.260	1.222	115.000
21d User guides (found on the DMS Help page and distributed during DMS training sessions)	3.370	1.195	115.000
22 Number of DMS supporters frequently contacted	3.650	2.078	115.000
23a Helpfulness of DMS Vendor support staff	2.580	1.606	115.000
23b Helpfulness of Georgia Department of Education	3.700	1.573	115.000
23c Helpfulness of Georgia State University	4.460	1.223	115.000
23d Helpfulness of Grant project/program director	3.080	1.702	115.000
23e Helpfulness of Local evaluator	4.030	1.507	115.000
23f Helpfulness of Regional consultant	3.850	1.563	115.000
23g Helpfulness of Site coordinator/director/manager	3.060	1.723	115.000
23h Helpfulness of support staff	3.627	0.879	115.000
23i Helpfulness of Technology department at your afterschool center	4.250	1.401	115.000
24 Please indicate your overall level of satisfaction with the DMS system.	2.850	0.786	115.000
27 Level of Confidence with DMS	3.583	0.903	115.000
27a For completing reporting requirements	3.570	1.109	115.000
27b For helping reduce missing data that is required of the afterschool program data collected	3.500	1.187	115.000
27c For improving the accuracy of data collected on the afterschool	3.610	1.090	115.000
27d For storing afterschool program administrative data (e.g. staffing, funding information)	3.370	1.260	115.000
27e For storing afterschool program performance data (e.g. attendance, activities offered)	3.770	1.026	115.000
27f For storing individual students' information (demographics, state assessment scores)	3.680	1.072	115.000

APPENDIX E

QUALITATIVE CO-OCCURRING CODE COEFFICIENTS

Theme	Code	Co-occurring Codes	*C*	Relationship Strength
UFE	Organization political climate	Organization culture	.41	Moderate
	Evaluation activities	Stakeholder engagement	.59	Moderate
		Needs for evaluation	.50	Moderate
		Evaluation facilitators	.50	Moderate
	Evaluation Facilitators	Needs for evaluation	.63	Strong
		Stakeholder engagement	.46	Moderate
	Needs for Evaluation	Stakeholder engagement	.41	Moderate
PE	Evaluation Requirements	Information and systems	.41	Moderate
		Evaluation facilitators	.41	Moderate
		Needs for evaluation	.41	Moderate
ECB	Data Management Practices	Evaluation activities	.51	Moderate
		Stakeholder engagement	.49	Moderate
		Intended evaluation uses	.44	Moderate
		Evaluation facilitator	.41	Moderate
	Stakeholder engagement	Intended evaluation uses	.63	Strong
		Evaluation facilitators	.45	Moderate
		Needs for evaluation	.42	Moderate
DMSE	Data Accessibility	DMS functionality	.61	Strong
		Continuous quality improvement	.44	Moderate
		Stakeholder engagement	.42	Moderate
		Evaluation activities	.40	Moderate
	Continuous quality improvement	DMS functionality	.48	Moderate
	Performance monitoring	Evaluation facilitators	.44	Moderate
		Needs for evaluation	.42	Moderate
UFE	Organization political climate	Organization culture	.41	Moderate
	Evaluation activities	Stakeholder engagement	.59	Moderate
		Needs for evaluation	.50	Moderate
		Evaluation facilitators	.50	Moderate
	Evaluation Facilitators	Needs for evaluation	.63	Strong
		Stakeholder engagement	.46	Moderate
	Needs for Evaluation	Stakeholder engagement	.41	Moderate
PE	Evaluation Requirements	Information and systems	.41	Moderate
		Evaluation facilitators	.41	Moderate
		Needs for evaluation	.41	Moderate
ECB	Data Management Practices	Evaluation activities	.51	Moderate
		Stakeholder engagement	.49	Moderate
		Intended evaluation uses	.44	Moderate
		Evaluation facilitator	.41	Moderate
	Stakeholder engagement	Intended evaluation uses	.63	Strong
		Evaluation facilitators	.45	Moderate
		Needs for evaluation	.42	Moderate
DMSE	Data Accessibility	DMS functionality	.61	Strong
		Continuous quality improvement	.44	Moderate
		Stakeholder engagement	.42	Moderate
		Evaluation activities	.40	Moderate
	Continuous quality improvement	DMS functionality	.48	Moderate
	Performance monitoring	Evaluation facilitators	.44	Moderate
		Needs for evaluation	.42	Moderate

Note: The c-coefficient for co-occurring codes represents the strength between two codes and is computed by dividing the total count of co-occurrences between code 1 and code 2 by the sum of the count of coded segments for code 1 and the count of coded segments for code 2 and then subtracting the total count of co-occurrences between code 1 and code 2. The key for measuring strength of co-occurring code relationships using c-coefficients (*C*): 1.0 = Perfect; .80–.99 = Very Strong; .60–.79 = Strong; .40–.59 = Moderate; .20–.39 = Weak; .01–.19 = Extremely Weak; 0 = None.

APPENDIX F

DMS SURVEY ITEM CORRELATIONS

	Q 2	Q 4	Q 6	Q 7	Q 8	Q 9	Q 10	Q 11	Q 12	Q 13	Q 17	Q 24	Q 5	Q 14	Q 16	Q 18	Q 19	Q 20	Q 21	Q 22	Q 23
Q 2: Percent time using a computer																					
Q 4: Years using a computer	.062																				
Q 6: Computer skill level	-.270**	-.320**																			
Q 7: DMS skill level	-.383**	-.251**	.626**																		
Q 8: Months using DMS	.355**	.179	-.340**	-.521**																	
Q 9: Recency of last DMS login	.211*	-.004	-.157	-.383**	.141																
Q 10: Frequency of DMS login	.236*	-.012	-.175	-.310**	.111	.739**															
Q 11: Number DMS trainings attended	.014	.179	-.195*	-.326**	.293**	.115	.009														
Q 12: Recency of last DMS training attendance	.002	-.020	.043	-.003	-.221*	.261**	.255**	.442**													
Q 13: Desire for more DMS training	-.305**	-.002	-.035	.100	.033	-.240**	-.062	-.165	-.237*												
Q 17: Frequently of DMS information use	.241**	-.067	-.186*	-.251**	.035	.459**	.571**	.109	.298**	-.203*											
Q 24: Level of satisfaction with the DMS	-.226*	-.041	.062	.233*	-.094	-.202*	-.184*	-.191*	-.272**	.187*	-.258**										
Q 5: Number of ways computer used for work duties	.038	.197*	-.220*	-.189*	.089	-.035	-.038	.145	-.029	.071	.068	-.095									
Q 14: Number of actions performed on the DMS	.255**	.253**	-.453**	-.601**	.475**	.276**	.212*	.408**	.120	-.090	.317**	-.061	.421**								
Q 16: Number of ways DMS data are used	.190*	.171	-.380**	-.393**	.364**	.156	.201*	.235*	.067	.051	.363**	-.137	.480**	.686**							
Q 18: Usefulness of DMS data to work	.203*	.054	-.208*	-.236*	.164	.197*	.168	.191*	.109	-.168	.456**	-.198*	.192*	.421**	.458**						
Q 19: Overall usefulness of the DMS	.279**	.097	-.161	-.219*	.077	.183	.153	.141	.238*	-.326**	.523**	-.479**	.124	.224*	.256**	.726**					
Q 20: Frequency of issues using the DMS	-.079	-.194*	.087	-.109	-.088	.045	.152	.040	.227*	-.001	.172	-.421**	-.121	-.073	-.005	.058	.190*				
Q 21: Helpfulness of DMS tools	.215*	.099	-.122	-.241**	.188*	.195*	.201*	.281**	.149	-.146	.318**	-.368**	.177	.336**	.340**	.567**	.542**	.168			
Q 22: Number of DMS help resources used	-.261**	-.198*	.100	.255**	-.242**	-.010	.011	-.284**	-.038	.125	.058	.108	-.182	-.255**	-.213*	-.022	.053	.047	-.124		
Q 23: Helpfulness of DMS resources	-.211*	-.114	.144	.182	-.282**	-.080	-.134	-.178	.017	-.013	-.366**	.152	-.140	-.323**	-.488**	-.431**	-.392**	-.090	-.406**	.008	
Q 27: Level of confidence in the DMS	.227*	.074	-.150	-.242**	.165	.258**	.237*	.132	.098	-.129	.312**	-.483**	.208*	.319**	.337**	.536**	.463**	.367**	.506**	-.140	-.339**

Note: *$p < .05$, **$p < .01$.

APPENDIX G

DMS USER SURVEY ITEM CONSTRUCT RELIABILITY SUMMARY

Construct	Items	α	Degree of Internal Consistency
DMS-ECB	Question 6: Self-Perceived Computer Skill level	.760	Good
	Question 7: Self-perceived DMS Skill level		
DMS-PE	Question 9: Recentness of DMS use	.741	Good
	Question 10: Frequency of DMS use		
	Question 12: Recentness of DMS training		
	Question 17: Frequency of Use for DMS information		
DMS-UFE	Question 5: Number of types of computer uses at work	.767	Good
	Question 14: Number of actions performed on DMS		
	Question 16: Number of ways DMS data used		
DMS Evaluation	Question 18: Usefulness of DMS information	.627	Questionable
	Question 19: Usefulness of DMS data collection		
	Question 21: Helpfulness of DMS resources		
	Question 27: Level of confidence with DMS		
	Question 24: Level of satisfaction with the DMS		

Note: Key for measuring internal consistency using Cronbach's alpha (α) of survey item constructs $0.9 \leq \alpha$ = Excellent internal consistency; $0.8 \leq \alpha < 0.7$ = Good internal consistency; $0.6 \leq \alpha < 0.7$ = Acceptable internal consistency; $0.50 \leq \alpha < 0.6$ = Questionable internal consistency, $0.5 \geq \alpha$ - inconsistent.